Whittaker Corporation
10880 Wilshire Boulevard
Los Angeles, CA 90024-4163
213/475-9411

Gordon J. Louttit
Vice President
Assistant General Counsel

August 25, 1988

Mr. Michael A. Fernandez, P.E.
U. S. Environmental Protection Agency
Region IX
214 Fremont Street
San Francisco, California 94105

Re: Your Letter Re: T-2-2, Requesting
Information on Solid Wastes Management Units

Dear Mr. Fernandez:

In accordance with your request, the attached information and data have been prepared. It should be noted that large volumes of data and information have been submitted to you regarding the closure of the various RCRA units and that data is included by reference to this document. Several appendices are included to consolidate the data requested.

We appreciate the assistance that you and the California Department of Health Services have provided Whittaker during the closure process. We are available to discuss any questions you may have on the enclosed materials.

Very truly yours,

GJL:tmb
Enclosures

cc: Alan Sorsher, DHS-SCS

Signature and Certification

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature

Gordon J. Louttit
Vice-President

Name and Title

DOCUMENTATION REPORT

SOLID WASTE MANAGEMENT UNITS

Prepared for:

BERMITE DIVISION
Whittaker Corporation
22116 West Soledad Canyon Road
Saugus, California 91350

Prepared by:

WENCK ASSOCIATES, INC.
832 Twelve Oaks Center
15500 Wayzata Boulevard
Wayzata, Minnesota 55391-1418
(612) 475-0858

AUGUST 1988

TABLE 1

Units Which Were Present at the Facility
Bermite Division, Saugus, CA
EPA No. CAD 064 573 108

	Unit	Yes	No	Comment
1.	Landfill	X		See Attached Table 2-1
2.	Surface Impoundment	X		See RCRA Approved Closure Plan & Appendix A
3.	Landfarm		X	
4.	Waste Pile		X	
5.	Incinerator		X	
6.	Storage Tank (Above Ground)	X		317 Area- See Appendix E Other-see Table 2-6
7.	Storage Tank (Below Ground)	X		See County of Los Angeles Ltrs dated January 9, 1986 March 25, 1987 and Sept. 15, 1987 and Supporting documents in Appendices B, C, and D respectively.
8.	Container Storage Area	X		See Appendix E
9.	Injection Well		X	
10.	Waste Water Treatment Unit	X		Lead Azide (Bldg. 207) See Appendix A
11.	Transfer Station	X		See Appendix E
12.	Waste Recycling Operation		X	
13.	Waste Treatment Units		X	

TABLE 1 (cont'd)

Units Which Were Present at the Facility
Bermite Division, Saugus, CA
EPA No. CAD 064 573 108

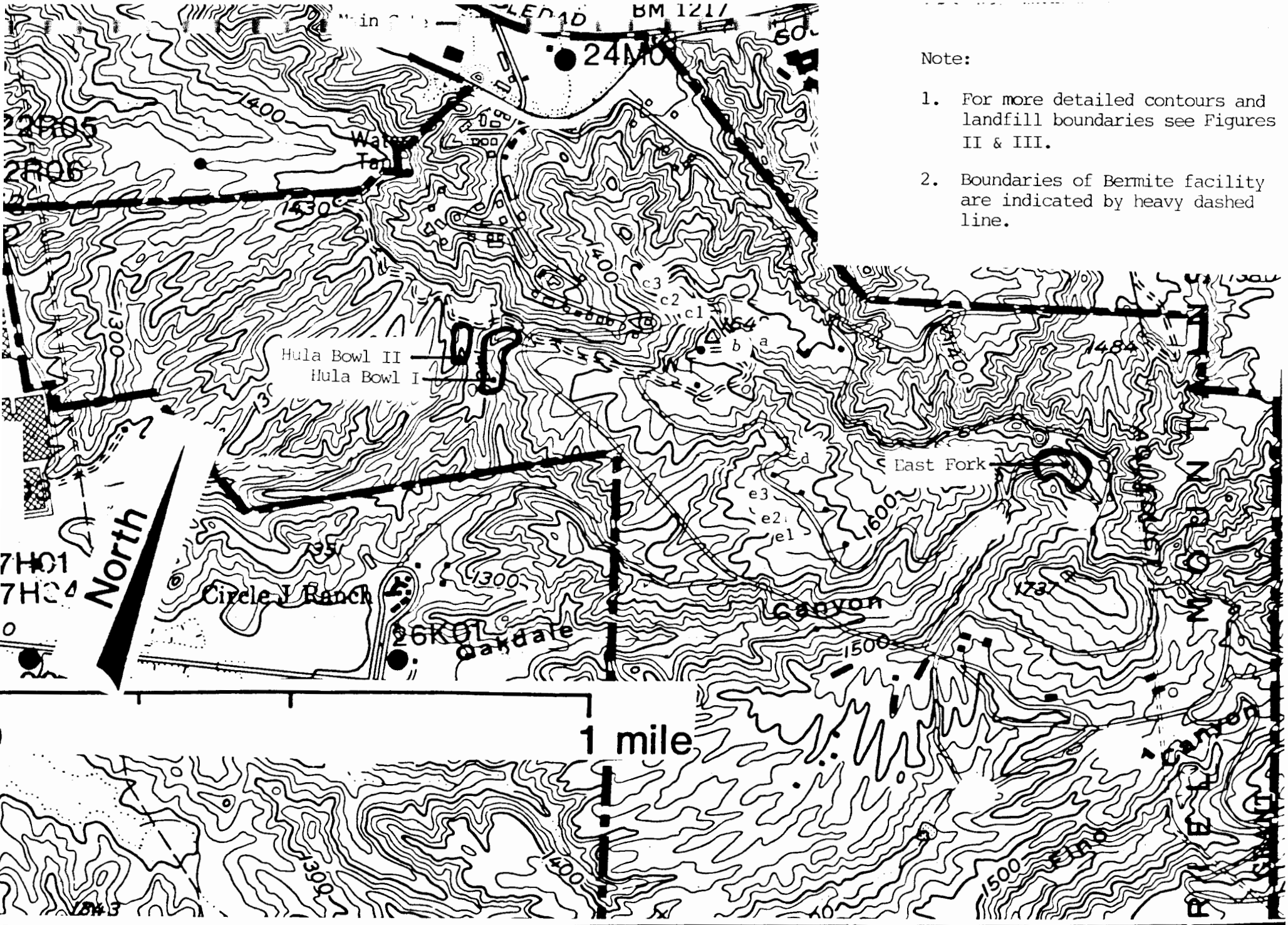
Unit	Yes	No	Comment
14. Waste Detoxification Units		X	
15. Other	X		See Appendix E

TABLE 2-1

Detailed Information on Units Which Were Present

LANDFILLS

2.	GENERAL	
	Type of Unit:	Demolition and General Trench Landfills
	Location of Unit:	See Fig. I, II, III 2 @ Hula Bowl, 1 @ East Fork
	Capacity:	Hula Bowl I 35,000 cubic yards Hula Bowl II 35,000 cubic yards East Fork 30,000 cubic yards
	Units Closed:	Yes
	Description of Materials:	Demolition and General Trash. Wood, Scrap Metal, Plastic Parts Paper Scrap
	Are Materials Considered Hazardous:	No
3.	RELEASES:	None
4.	CORRECTIVE ACTION:	None - Demolition Materials etc. have been removed

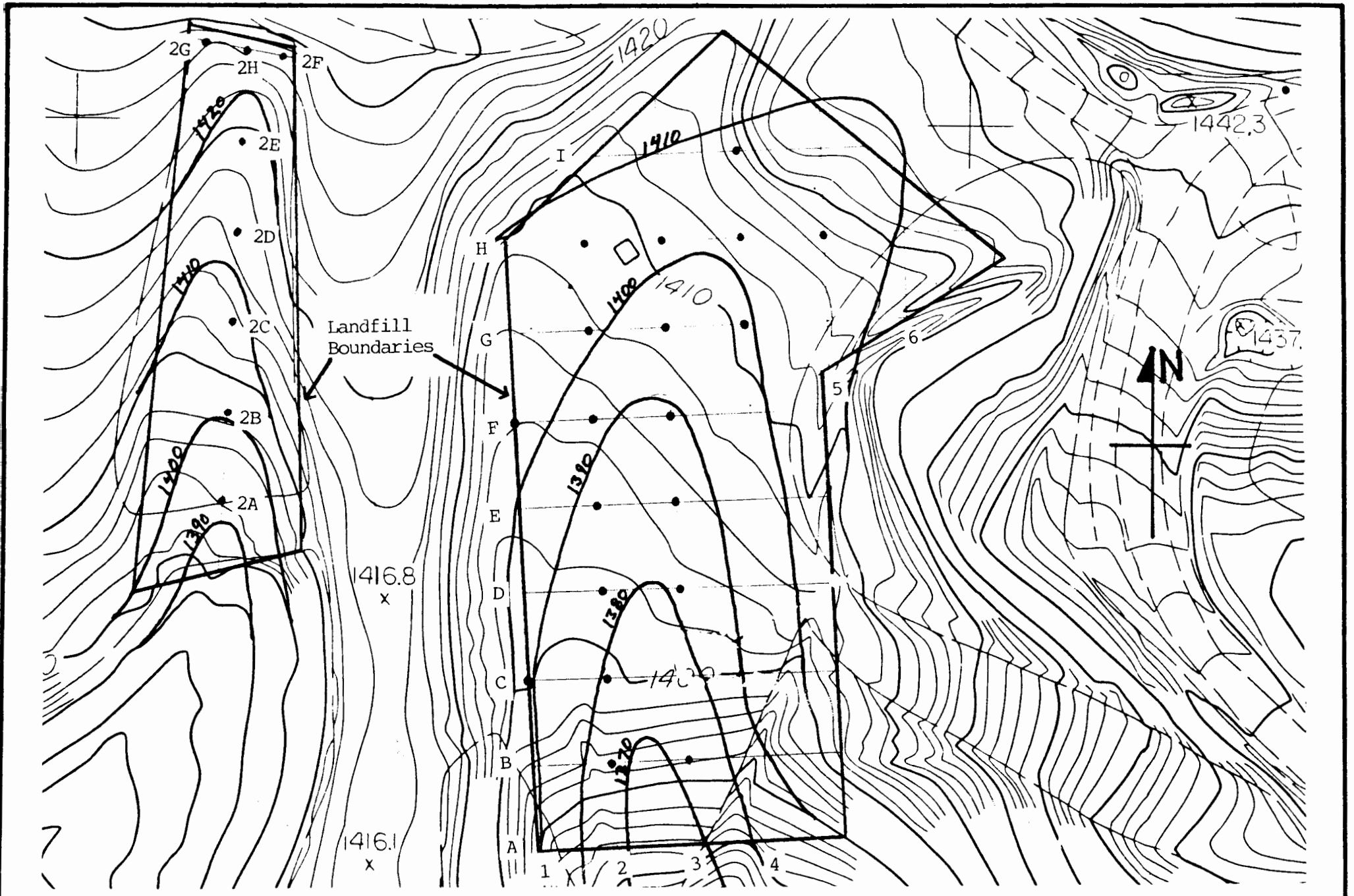


Note:

1. For more detailed contours and landfill boundaries see Figures II & III.

2. Boundaries of Bermite facility are indicated by heavy dashed line.

BERMITE DIVISION - WHITTAKER CORPORATION	Consulting Engineers	FIG
Landfill Location Map - Bermite Facility	Wenck Associates, Inc. Twelve Oaks Center 15500 Wayzata Blvd. Wayzata, MN 55391	I



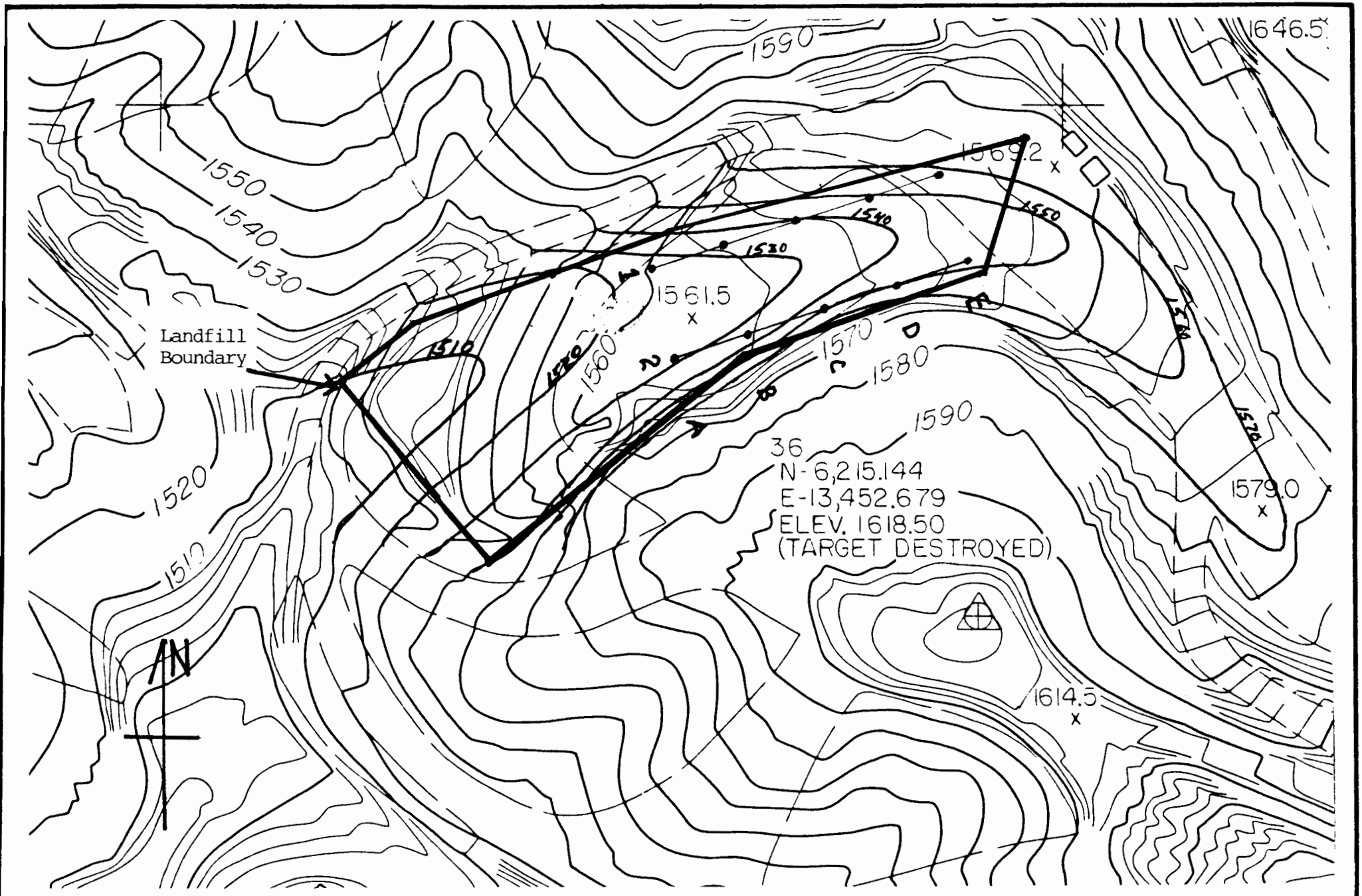
BERMITE DIVISION - WHITTAKER CORPORATION

Contour Map - Hula Bowl I & II, includes sampling grid Scale 1" = 71'

Consulting Engineers

Wenck Associates, Inc.
Twelve Oaks Center
15500 Wayzata Blvd.
Wayzata, MN 55391

Fig. II



BERMITE DIVISION - WHITTAKER CORPORATION

Contour Map - East Fork, including sampling points, scale: 1" ≡ 71'

Wenck Associates, Inc.
Consulting Engineers
Twelve Oaks Center
15500 Wayzata Blvd.
Wayzata, MN 55391

Fig. III

TABLE 2-6

Detailed Information on Units Which Were Present

ABOVE-GROUND STORAGE TANKS

2. GENERAL

Type of Unit:	3 Steel Storage Tanks - see Appendix E 4 Other Steel Storage Tanks
Location of Unit: and Capacity:	2@ Former Building 321, 1@ 500 gal, 1@ 1,000 gal 1@ Former Building 195, 1@ 500 gal 1@ Former Building 349, 1@ 1,000 gal
Units Closed:	Yes, 1987
Description of Materials:	See Appendix E, all others fuel oil
Are Materials Considered Hazardous:	Appendix E - Yes, others no

3. RELEASES: None

4. CORRECTIVE ACTION: None

TABLE 2-7.B

Detailed Information on Units Which Were Present

BELOW-GROUND STORAGE TANKS

2. GENERAL

Type of Unit:	Steel Storage Tanks
Location of Units:	See Appendix B, Building 4, 12, 224, 346
Capacity:	6,000; 2,000; 500; 6,000 gallons
Units Closed:	Yes, 1985
Description of Materials:	Fuel Oil, Gasoline, Heptane
Are Materials Considered Hazardous:	No

3. RELEASES: None

4. CORRECTIVE ACTION: None

TABLE 2-7.C

Detailed Information on Units Which Were Present

BELOW-GROUND STORAGE TANK

2. GENERAL

Type of Unit:	Concrete Storage Tank
Location of Unit:	See Appendix C, Former Building 308
Dimensions:	6' x 6' x 78"
Unit Closed:	Yes, 1987
Description of Materials:	Wash Water
Are Materials Considered Hazardous:	No

3. RELEASES: None

4. CORRECTIVE ACTION: None

TABLE 2-7.D

Detailed Information on Units Which Were Present

BELOW-GROUND STORAGE TANKS

2. GENERAL

Type of Unit:	Two Steel Storage Tanks
Location of Units:	See Appendix D
Capacity:	2@ 2,000 gallons
Units Closed:	Yes, 1987
Description of Materials:	Gasoline
Are Materials Considered Hazardous:	No

3. RELEASES: None

4. CORRECTIVE ACTION: None

APPENDIX A

APPROVED RCRA FACILITY CLOSURE PLAN
PER CALIFORNIA DEPARTMENT OF HEALTH SERVICES
LETTER DATED DECEMBER 28, 1987

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY GEORGE DEUKMEJIAN, Governor

DEPARTMENT OF HEALTH SERVICES
107 SOUTH BROADWAY, ROOM 7011
LOS ANGELES, CA 90012
(213) 620-2380

December 28, 1987

Mr. Gordon Louttit
Vice President
Whittaker Corporation
10880 Wilshire Boulevard
Los Angeles, California 90024

Dear Mr. Louttit:

WHITTAKER CORPORATION, BERMITE DIVISION, SAUGUS, CA CAD064573108, FACILITY CLOSURE PLAN MODIFICATIONS

As a result of the meetings held on October 5, 6, 7, and November 12, 1987 between yourself, your consultants, staff of the California Department of Health Services (DHS), the Region IX office of the U.S. Environmental Protection Agency (EPA) and the State Water Quality Control Board, Los Angeles Region, (RWQCB, on October 6, and November 12), we have tentatively revised the previously approved closure plan for the above-referenced facility.

Based upon the meetings held during early October, modifications developed by DHS and EPA were given to your consultant on October 27. Minor corrections and revisions to these modifications were discussed during the November 12 meeting. The results of that meeting are reflected in the enclosed versions of the modifications:

1. 317 Surface Impoundment, Rev. 4.1, including Work Plan for Soils Investigation and Removal, Rev. 1.1.

2. 342 Surface Impoundment, Rev 3.1.

3. Burn Areas, General Considerations, Rev. 2.0.

4. Burn Cage, Pans and Rails Area, Rev. 2.0.

5. Burn Pit Areas, Rev 1.

6. East Fork Detonation Range, Rev. 1.1.

7. Lead Azide Neutralizing Tanks, Bldg. 207, Rev. 1.

8. Dry Storage Units, 2 Buildings, 3 Wooden and 3 Steel Portable Magazines, Rev. 1.

9. QA/QC Plan, Revised 9/1/87.

10. Health and Safety Plan, Rev. 1.0.

In addition, we are enclosing versions of the schedules of closure activities reflecting the above revisions to the closure plan.

You should be aware that it will be necessary to "notice" this package of revisions for public comment before final approval. This necessary step should not, however, delay the implementation of those portions of the plan, such as the VOC removal at the former 317 surface impoundment and the groundwater study that are not being revised and which simply reflect decisions made pursuant to the approved closure plan of September 30. For example, the pilot VOC removal method for the 317 surface impoundment contained in the revised package constitutes an approved alternative VOC removal method under paragraph II.A.2 of the approved closure plan. The Work Plan listed above is approved for the pilot trenching.

It is our intention to public notice these revisions to the closure plan during the week of January 11, 1988. Therefore, you should notify us by January 11, 1988 if you feel there are any errors or discrepancies in the enclosures.

Should you have questions, please contact Alan Sorsher of the Southern California Section DHS at the above telephone number.

Sincerely,

Angelo Bellomo, Chief
Southern California Section
Toxic Substances Control Division
Department of Health Services

12-28-87
Date

for/ Jeff Zelikson, Director
Toxics & Waste Management Division
U.S. EPA, Region IX

12-31-87
Date

Enclosure

cc: (see next page)

cc: (w/enclosure)

✓ Norman Wenck
Wenck Associates,
832 Twelve Oaks Center
15500 Wayzata Blvd.
Wayzata, MN 55391

cc: (w/o enclosure)

Anastacio Medina, LA County Haz. Waste Program
2615 S. Grand Ave., 6th Floor
Los Angeles, CA 90007

Larry Peterson, RWQCB, Los Angeles
107 South Broadway, Room 4027
Los Angeles, CA 90012

Caroline Cabias, DHS, HWMS-TSCD, Sacramento
Financial Responsibility Unit - DHS, Sacramento

Introduction

According to a letter from Whittaker Corporation, Bermite Division to the Department of Health Services, (DHS), dated November 20, 1985, the surface impoundment located near building 317 and the waste contained in it were removed during March of 1983. These activities did not include an approved soil sampling program and did not follow the formal process for closure of a waste management unit under State law and the Federal Resource Conservation and Recovery Act (RCRA). Whittaker Corporation is now in the process of complying with the various procedural and administrative steps in order to formally close the RCRA waste management units at the Bermite Division facility in Saugus.

I GENERAL CLOSURE REQUIREMENTS

A. The closure process, partial versus complete closure, and the closure performance standard:

40 CFR 265.228(a) states: "At closure, the owner or operator must:

(1) Remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste, and leachate, and manage them as hazardous waste unless section 261.3(d) of this chapter applies; or

(2) Close the impoundment and provide post-closure care for a landfill under Subpart G and section 265.310, ..."

The closure performance standard, found in 40 CFR 265.111 states the the owner or operator must close his facility in a manner that:

(a) Minimizes the need for further maintenance, and

(b) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters or to the atmosphere.

(c) Complies with the closure requirements of Sections 265.197, 265.228, 265.258, 265.280, 265.310, 265.351, 265.381, and 265.404.

Since all liquid hazardous waste, as well as the surface impoundment liner and structure have already been removed and disposed of at a Class I hazardous waste disposal facility, there are two alternatives that exist for the remaining steps of the closure process. They are:

(1) determination of the source(s), and extent and removal of contamination in the soil underlying the former surface impoundment area as per 40 CFR 265.228(a), thereby meeting the closure performance standard, or

(2) cover the contaminated area and provide post-closure care as required in Subpart G and 40 CFR 265.310, thereby also meeting the closure performance standard.

B. General description of steps to be taken:

1. Extent of Soil Contamination

Whittaker has completed an initial boring program to develop a better understanding of the local hydrogeology and to analyze subsurface samples for chemical contamination. Borings as deep as 300 feet have not encountered any measurable ground water. Field sampling equipment has detected the presence of organic chemical vapors as deep as 100 to 130 feet below the ground surface.

Whittaker will perform further field investigation in order to determine the lateral and vertical extent of the organic compounds. This further work will also attempt to locate the source(s) of contamination, if such "hot spots" exist, and potential pathways in the environment in which contamination could migrate and become a possible threat to human health and the environment.

Soil samples obtained during the exploratory boring program were also analyzed for certain heavy metals which may have been in the waste stored in the impoundment. Comparison with the background soils will be made in order to determine whether the metals detected in the impoundment area constitute contamination or are present as naturally occurring minerals.

2. Meeting the closure performance standard

a. Soil

With regard to the contaminated soil, in order to meet the closure performance standard, the hazardous constituents must be prevented from posing a future threat by direct contact or by migration. In general, this threat can be prevented by techniques such as: capping the area, chemical fixation or immobilization, removal of the contaminated soil, or physical removal or destruction of the hazardous constituents in place.

In any situation where contaminants are to be left in the ground, a post-closure permit addressing the long-term maintenance and monitoring of environmental controls such as a cap, groundwater monitoring and land use restrictions would be required.

If the hazardous waste constituents are removed, a cap and land use restrictions would not be required, but groundwater monitoring would be necessary for a period of time to ensure that no residual migration into groundwater occurs, in violation of the closure performance standard.

b. Groundwater

Since this unit has apparently had a release, as evidenced by the soil contamination noted above, an assessment of the unit's impact on groundwater is essential. The steps required include further investigation to determine groundwater direction in the uppermost aquifer, the installation of a groundwater monitoring system capable of detecting and assessing any contamination resulting from the 317 or 342 surface impoundments, and chemical analysis of water samples obtained from the monitoring system.

If groundwater is contaminated by the impoundment, a program of treatment or cleanup and monitoring will be required under post-closure. If it is found that contamination from this unit has not reached groundwater and the contaminated soil discussed above is remedied, then only the detection groundwater monitoring will be required to verify that residual contamination is not entering the groundwater.

3. Work Plan

Based upon the information currently available, the method chosen to achieve the closure performance standard is described in detail below. The method that has been chosen is the "removal or decontaminate" alternative described above. It is felt that this alternative will provide the best means of minimizing the need for post-closure maintenance at the site and is the preferable method for the purpose of protecting human health and the environment.

The concentrations of the metals and VOCs that have been found in the initial soils investigation are relatively low and present no special problems for handling, testing, treating and/or disposal. Level C worker protection is most likely the highest level to be required during the implementation of the work plan. By removing the contaminants from the site, any future threat to human health and the environment is minimized.

If any unexpected discovery or new information is developed which significantly changes the envisioned closure activities, a new public notice will be issued as per 40 CFR 265.112(c).

II CLOSURE ACTIVITIES

A. Removal of Volatile Organic Chemical (VOC) Vapors from Soil

Bermite has proposed excavation of impoundment soils following field testing to determine the extent of VOC contamination. Sampling and staged removal of an initial 10-foot wide trench may be approved by EPA and DHS. Such approval would be contingent upon the proposal addressing all potential regulatory concerns including but not limited to the following factors:

- o Protection of public health and the environment.
- o Compliance with additional regulatory requirements that may be triggered.
- o Full details of proposed decontamination/treatment procedures.
- o Full details of sampling, measurements, analysis and QA/QC procedures during the cleanup and verification.

Following a review by DHS and EPA of the field and laboratory data obtained during the initial sampling and trenching operation and the effectiveness of the operation itself, approval may be granted to expand the technique to the rest of the 317 impoundment area. A copy of Bermite's trenching plan as modified by DHS and EPA is attached.

Depending upon field conditions encountered and the effectiveness of the above characterization and removal technique, an additional characterization and mitigation method such as vapor extraction may be needed to supplement or replace the stagewise removal and sampling. If it is determined that such a program is required, it shall address the following main points:

1. Prior to installing the extraction system, determine the vertical and horizontal extent of contamination by installing a series of gas probes or other approved methods around the area of high vapor concentration determined during the previous boring/excavation work.

   - Multiple completion probes may be used to reduce drilling costs. The probe layout and design, including the seals must be approved by DHS, EPA, the South Coast Air Quality Management District and the L. A. Regional Water Quality Control Board (the Agencies) prior to field installation.

2. The effective zone of influence and other design parameters shall be determined by pilot testing prior to the design of the extraction system. The pilot test shall be proposed by Bermite, approved by the regulatory agencies prior to execution

4. Surveying and mapping:

As discussed in the following sampling plans, Bermite shall provide detailed maps with appropriate scales of the surface impoundment areas, including exact locations (if possible) of the waste management units, all previous soil sampling locations, and survey markers. Boundaries of sampling areas shall be clearly delineated on the maps. The map shall also show topographical features. Four foot contour lines displayed on previous maps should be adequate.

5. Appendix VIII and other hazardous constituents:

a. In general, owner/operators (o/o) may be required to analyze all soil, ground-water, and surface water samples for all Appendix VIII constituents. However if warranted and properly documented, the number of parameters analyzed during the closure process may be reduced. The reduction of the parameters would be based upon the results of waste sampling and analysis in conjunction with records of chemical management at the site.

   The o/o must demonstrate that either (1) certain constituents could not be present at the facility or that (2) analyses of certain constituents would not provide reliable analytical results regarding the presence of those constituents.

   To demonstrate that certain constituents could not be present at the facility, the owner/operator may wish to provide information which includes but is not necessarily limited to:

   - The raw materials, intermediate products, byproducts, and final products used or produced at the facilities contributing wastes to the waste management unit (e.g., manifests, chemical purchase orders, record ledgers, etc.)
   - The degradation products of the constituents known to be present in the unit
   - Available waste sampling and analysis data

b. At least one sample from the area of highest concentrations of constituents found during the previous sampling shall be analyzed for all hazardous constituents listed in 40 CFR Part 261 Appendix VIII which are a threat to public health and any additional hazardous constituents determined to have been possibly present in the waste management unit, unless they have been eliminated per the above procedure.

   This sample should be analyzed first. Appendix VIII or other hazardous constituents found in this sample shall be analyzed for in the other samples from this waste management unit.

6. Sample collection:

Soil samples shall be volumetrically representative, that is not favor one portion of the sample volume over another.

Soil strata to be studied under this part of the plan are the two foot thick zone beginning at the present surface, and a two foot thick zone beginning at the bottom of the former surface impoundment excavation. At least 6 random horizontal locations (at least 6ft apart) for core samples shall be determined and submitted for approval prior to sampling. Samples shall be taken at the surface to 6", 6" - 12", 12" - 24", and from the surface of the 1983 excavation: 0" - 6", 6" - 12", and 12" - 24".

Indicate an additional sampling location at the loading/unloading area of the former impoundment. At least one sample shall be taken from the second elevation zone above.

Indicate an additional sampling location at the "hot spot" found during the previous exploratory boring program.

Submit a map showing the above sampling locations (including how the sampling points were determined) to DHS and EPA for approval prior to implementation.

Soil removed from these two zones shall be segregated from each other and the other piles pending the results of the laboratory analysis.
At least two samples shall be taken from any other soil pile and analyzed for appropriate constituents.

Surface samples shall also be taken at the 20 ft and 30 ft levels, if excavated to that depth.

Notify DHS, EPA and the Los Angeles Regional Water Quality Control Board (RWQCB) at least 10 days prior to commencing field work.

7. Laboratory analysis:

Soil samples for analysis of metals shall be prepared according to Method 3050 (EPA SW-846, 3rd edition) with the following conditions: Digest 5 grams of a representative sample of soil crushed to pass a 2mm screen in 50ml of acid. An equivalent amount of hydrogen peroxide shall be used for all samples with proper consideration for contamination of samples by reagents used in the digestion procedure.

8. Data interpretation:

Statistical methods shall be employed to determine whether metal or other constituent concentrations in soils are significantly greater than background. A one-tailed t-test (see Steele and Torrie,

Principles and Procedures of Statistics, 1st Edition, Section 5.8 as referenced in Appendix IV of 40 CFR 264) for comparison of sample means shall be used unless Bermite obtains approval from DHS and EPA to use an alternate statistical test. A 95% confidence limit shall be employed and the coefficient of variation for each sample group shall be reported.

Cross-sections showing the locations determined to be contaminated shall be developed.

Repeat sampling and analysis if needed to establish the presence or absence of contamination compared to background soils and the vertical and horizontal extent of any contamination.

9. Removal:

Any area determined to be contaminated will be excavated and the soil disposed of at a hazardous waste disposal facility. Verification sampling may be required following excavation. Wind dispersion of soils, dusts or contaminants shall be minimized during loading and transport.

C. Other conditions:

1. - Until all contamination is removed, Bermite shall prevent rainfall or rainfall run-on from washing contaminants further into the soil by the use of berms and/or tarps.

2. - Minor modifications to the sampling frequency and technique may occur, depending upon field conditions encountered, but Whittaker-Bermite shall endeavor to closely follow the general principles of this plan. The DHS and EPA shall be notified at Whittaker's earliest convenience of such modifications.

3. - Any obviously apparent "hot spots" must be addressed in the closure procedure.

Unless a convincing rationale for doing otherwise is provided, the samples shall be analyzed for the following constituents:

Chemical analysis shall be for those parameters listed on pages IV-9 and IV-10 of the revised closure plan dated April 1987 prepared by Wenck and Associates.

III Groundwater Monitoring Plan for 342 and 317 Impoundments

Recent final rules for surface impoundment closure require that the groundwater be verified free of contamination from hazardous constituents. If contamination is found, the program will be modified to include assessment and corrective action.

1. Three wells shall be installed capable of identifying and characterizing the uppermost aquifer as described in EPA's Technical Enforcement Guidance Document, including determining the direction of groundwater flow in the vicinity of the former surface impoundments. If three wells prove inadequate to identify and characterize the uppermost aquifer, Bermite will submit a plan for additional wells. After further consultation with DHS, EPA, and RWQCB, well locations, drilling techniques, well construction and development methods and other information will be submitted by Bermite and will be approved or modified and approved by the regulatory agencies prior to execution. The determination shall be performed by Bermite, and a report of the findings shall be submitted to EPA, DHS, and RWQCB for approval before proceeding to the next step.

2. If necessary, as determined by the above agencies, additional wells shall be installed to complete a groundwater monitoring system per the EPA's Technical Enforcement Guidance Document. After further consultation with DHS, EPA, and RWQCB, a proposal for the system shall be submitted which will include, but not be limited to well locations, drilling techniques, and well construction and development details. The proposal shall be approved by the above regulatory agencies prior to installation of the system. The system shall be capable of detecting and assessing any impact on groundwater from the former surface impoundments. If necessary, the system shall be durable enough to operate over an extended period of time.

3. A proposed interim status closure groundwater monitoring program shall be submitted to the above agencies for approval. The program shall include, but not be limited to sampling techniques and equipment, maintenance and security of the system, sampling frequency and the chemical and physical water parameters to be tested.

October 9, 1987
Rev 1.1

317 WORK PLAN FOR SOILS INVESTIGATION AND REMOVAL AT THE 317 AREA BERMITE DIVISION, WHITTAKER CORPORATION SAUGUS, CALIFORNIA

1. INTRODUCTION

The soil borings and chemical analysis of soil samples from the 317 former surface impoundment completed in July 1987 indicate that there are some levels of trichloroethene (TCE) and 1,2-dichlorobenzene (DCB) present in the subsurface soils. The results of the investigation are presented in an earlier report titled "Subsurface Investigative Program, Whittaker Corporation, Bermite Facility, Saugus, California, July 28, 1987. The greatest concentration found in the laboratory analysis is 24 ppb. During the boring and sampling work, low levels of organic vapors were also detected (up to 500 ppm). It is proposed that the possible source(s) of these organic compounds be determined and removed if they exist. This determination and removal is proposed to be accomplished by uncovering the subsoils, locating the source(s) and treating or disposing of the soils or source(s).

2. PURPOSE

The purpose of removing the soils is to determine the extent of and possible source(s) of the contamination and to remove the contamination so that it does not pose a threat to human health or the environment.

3. PLAN

a. Excavation

The soils will be excavated from the 317 area in approximately 6 inch lifts after the top 12 inches of asphalt and compacted surface soils are removed. An area approximately 10 feet by 165 feet will be excavated to a depth of approximately 20 feet. This area will be extended as necessary to encompass the horizontal extent of any volatile organics after DHS and EPA have reviewed the effectiveness of the procedure in determining the extent of contamination based on the field and laboratory results and approved the expansion. However, if a specific region or pocket of organics at a level of 500 ppm or more has been located, it may be immediately removed.

After the 20 foot depth is reached, further sampling of the near-surface soils will be undertaken to determine if the extent of the organics and metals (if comparison with background warrants), has been determined. Samples will be collected at the nodes, analyzed for volatile organics per EPA method 8240, and the 8 heavy metals, compared to the background values. If the vertical extent has not been determined, permission from EPA and DHS will be

requested to excavate vertically for approximately 10 feet further. This excavation will be undertaken in the same manner as the first 20 feet.

If upon further testing of the soils below the 30 foot depth, the vertical extent has not been determined, a secondary plan of VOC removal may be undertaken. This alternative plan shall be approved by the agencies prior to implementation.

A plan view of the excavation can be seen on Figure 1.

b. Field sampling and analysis

Sampling of the soils to be removed will take place prior to removal of each lift for the purpose of determining the vertical and horizontal extent of the contaminants and for segregating the soils into piles as follows: no vapors up to 50 ppm, soils with vapors up to 500 ppm. Soils with vapors greater than 500 ppm will be immediately removed from the site upon excavation.

As a minimum, a grid 25 feet on center as shown on the attached Figures 1 and 1A will be used to create nodes for sampling the soil, as described below, prior to removal. Additional sample points may be similarly analyzed between and beyond the nodes to more precisely define the extent of contamination. These results of relative concentrations will be plotted onto a scaled drawing of the area. This will then be used to choose which soils will be disposed of immediately upon excavation and which soils will be tested further for metal concentrations.

Soil samples will be obtained by hand coring. A 12" core will be taken and the soil to be analyzed will be taken from the lower 6" of the sample core. The coring tool will be cleaned between each sampling in accordance with the procedures outlined in the QA/QC section of the revised RCRA Closure Plan.

A 125 ml sample will be taken at each node and placed into a 250 ml jar which will be placed in a thermostated oven at 100 degrees F. After 15 minutes the headspace vapor concentration will be taken in each sample container.

A possible alternative to the headspace method is to drive or push a 1-ft deep punchbar or probe into the ground at the nodes and directly read the vapor concentration with the OVA after covering the hole and allowing time for re-equilibration of the soil vapors.

Core samples shall also be taken for analysis of non-volatile constituents as specified in the closure plan.

After the excavation of the trench, 3 vapor probes will be driven into selected areas of the excavation to verify that the extent of

the volatile organics has been determined. The locations of the probes will be dependent on the results of the organic vapor concentrations found during excavation and after consultation with the EPA and DHS.

At least 5 additional 30 - 35 foot deep probes shall be installed beyond the trench area in order to investigate the surrounding impoundment area. Proposed construction information and locations shall be furnished within 5 days of the completion of the initial trenching.

c. Segregation of soils

As many as eight piles will be created from the excavated soils. Each of the four soil horizons given below will be separated into two piles on the basis of the OVA readings given above:

0' - 2'	
2' - 16'	
16' - 18'	(approx. top of former excavation)
18' - 20'	

The soils with vapors exceeding 500 ppm will be disposed of as hazardous waste immediately upon excavation. The other soils may be tested further for metal concentrations. The eight piles will be placed on plastic approximately 100 feet east of the 317 area.

d. QA/QC

Duplicate samples will be taken from each lift. A sample with the highest OVA reading will be resampled from each lift. Samples with low or non-detectable readings will also be selected from the lift to ensure that a total of 5% field duplicate samples are taken.

Likewise, 5% split samples for laboratory verification shall be collected. These samples will be managed in accordance with the QA/QC procedures outlined in the approved Revised Closure Plan. These samples will be taken in metal sleeves, quickly capped, refrigerated and analyzed accordance with EPA method 8240. The results will be correlated with the field results to verify the procedures.

e. Management of excavated soils

The soils which are left on-site will be graded into piles approximately 3 feet thick. These piles shall be kept dry, except for any minimal watering for dust control. They will be covered with plastic and protected from run-on by berms.

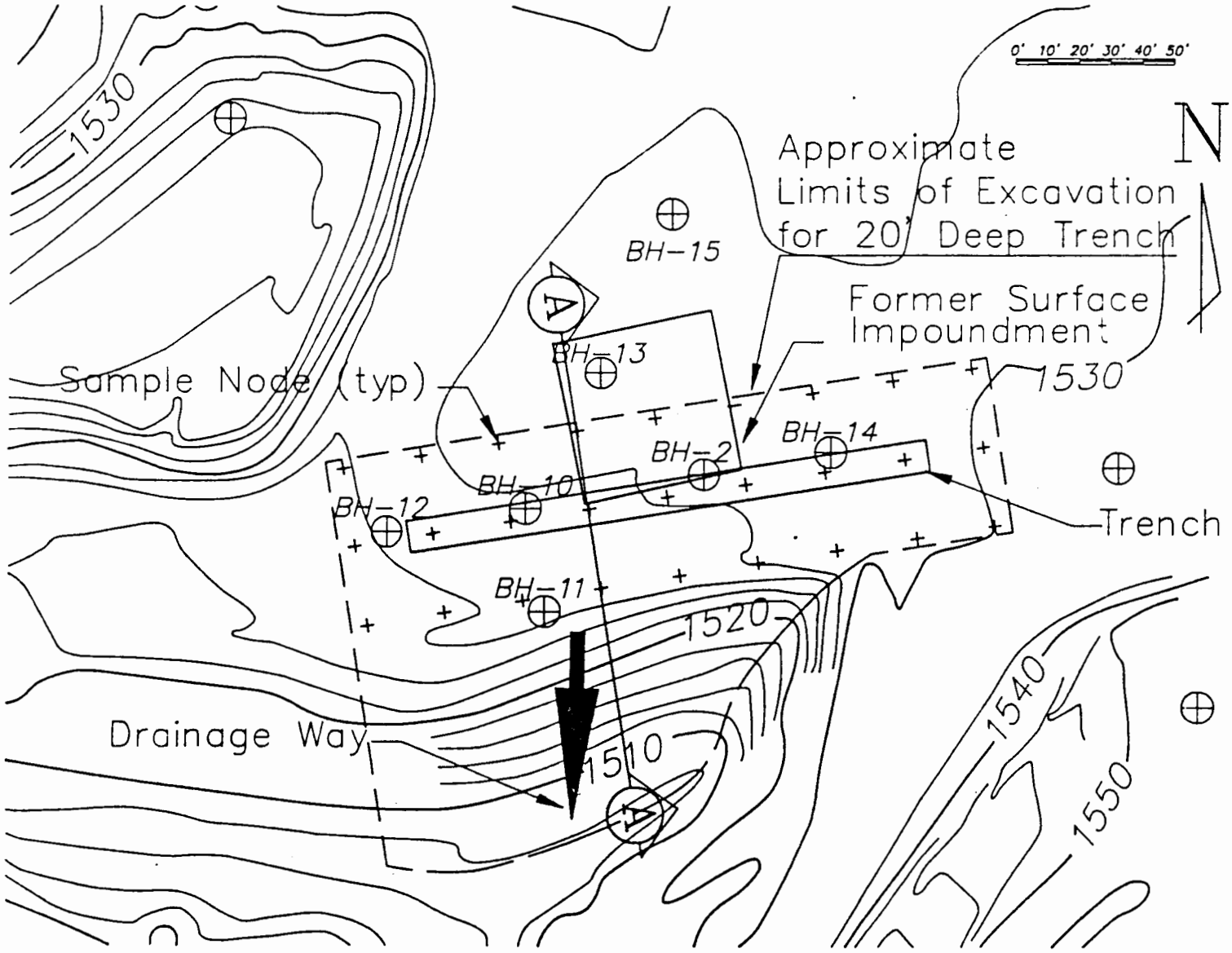
Except for soil piles that have already been sampled for metals and other non-volatile constituents before excavation, these soils will then be randomly tested for the non-volatile constituents of interest. The results of this analysis will be compared to the concentrations determined in the background samples taken at the burn area. If necessary, soil piles will be disposed of as hazardous waste. If the metal and any other concentrations are not significantly higher than the background, then the soils will be disked to volatize any remaining organic vapors. The necessary approval will be obtained for this work.

4. QUALITY CONTROL

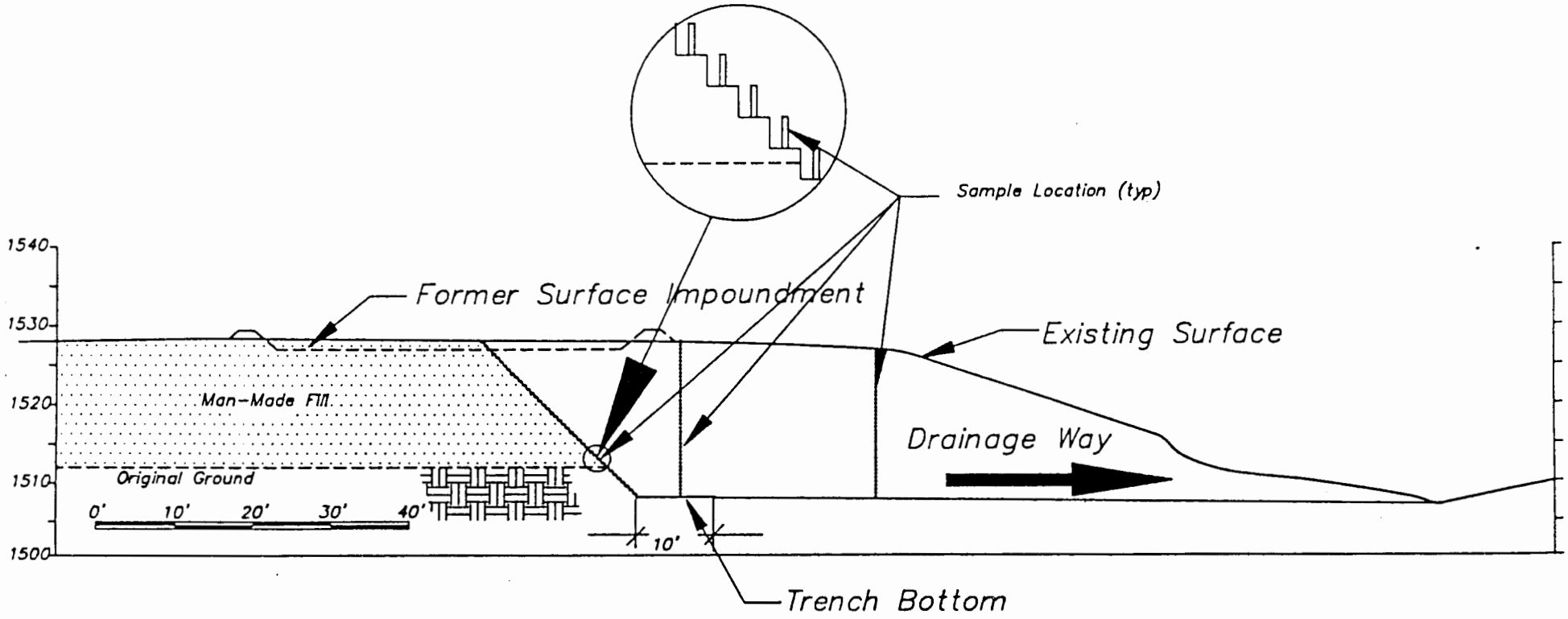
All work shall be done in accordance with QA/QC plans and specifications that are detailed in the Revised RCRA Closure Plan for Bermite Division of Whittaker Corporation. Proper safety procedures will be followed to assure that personal safety is assured.

5. RAINFALL INTRUSION PREVENTION

The impoundment area, including the excavation will be protected from rainfall intrusion. If rain threatens while the trench is open, it shall be covered with plastic sheeting or tarps and pooling of water prevented.



Bermite Division - Whittaker Corporation	Consulting Engineers	Nov. 87
317 Area Soil Removal - Limits of Excavation		Fig



Bermite Division - Whittaker Corporation

Consulting Engineers

Nov. 87

Introduction

According to a letter from Whittaker Corporation, Bermite Division to the Department of Health Services, (DHS), dated November 20, 1985, the surface impoundment located near building 342 and the waste contained in it were removed during March of 1983. These activities did not include an approved soil sampling program and the formal process for closure of a waste management unit under State law and the Federal Resource Conservation and Recovery Act (RCRA). Whittaker Corporation is now in the process of complying with the various procedural and administrative steps in order to formally close the RCRA waste management units at the Bermite Division facility in Saugus.

I GENERAL CLOSURE REQUIREMENTS

A. The closure process, partial versus complete closure, and the closure performance standard:

40 CFR 265.228(a) states: "At closure, the owner or operator must:

(1) Remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste, and leachate, and manage them as hazardous waste unless section 261.3(d) of this chapter applies; or

(2) Close the impoundment and provide post-closure care for a landfill under Subpart G and section 265.310, ..."

The closure performance standard, found in 40 CFR 265.111 states the the owner or operator must close his facility in a manner that:

> (a) Minimizes the need for further maintenance, and
>
> (b) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated rainfall, or waste decomposition products to the ground or surface waters or to the atmosphere.
>
> (c) Complies with the closure requirements of Sections 265.197, 265.228, 265.258, 265.280, 265.310, 265.351, 265.381, and 265.404.

Since all liquid hazardous waste, as well as the surface impoundment liner and structure have already been removed and disposed of at a Class I hazardous waste disposal facility, the closure must be considered a complete closure as opposed to a partial closure. The remaining steps of the closure process must deal the determination of the extent of contamination in the soil underlying the former surface impoundment area, meeting the closure performance standard,

and determining what post-closure care and maintenance may be necessary at the site, as per 40 CFR 265.228(c).

B. General description of steps to be taken:

1. Extent of Soil Contamination

Whittaker Corporation, Bermite Division has completed an initial exploratory boring program to develop a better understanding of the local hydrogeology and to analyze subsurface samples for chemical contamination. Borings as deep as 300 feet have not encountered any measurable ground water. Further field investigation work will be performed in order to determine the lateral and vertical extent of any contamination.

Soil samples obtained during the exploratory boring program were also analyzed for certain heavy metals which may have been in the waste stored in the impoundment. Most of these samples were taken at considerable depth and showed low concentrations. Therefore, limited additional sampling at shallower depths should be done to confirm the earlier results. In addition, further sampling of the background soils must also be performed in order to determine whether the metals detected in the impoundment area constitute contamination or are present as naturally occurring minerals.

2. Meeting the closure performance standard

a. Soil

With regard to the contaminated soil, in order to meet the closure performance standard, the hazardous constituents must be prevented from posing a future threat by direct contact or by migration. In general, this threat can be prevented by techniques such as: capping the area, chemical fixation or immobilization, removal of the contaminated soil, or physical removal or destruction of the hazardous constituents in place.

In any situation where contaminants are to be left in the ground, a post-closure permit addressing the long-term maintenance and monitoring of environmental controls such as a cap, groundwater monitoring and land use restrictions would be required.

If the hazardous waste constituents are removed, a cap and land use restrictions would not be required, but groundwater monitoring would be necessary for a period of time to ensure that no residual migration into groundwater occurs, in violation of the closure performance standard.

b. Groundwater

Refer to the discussion on page 10 of the closure modification for the 317 surface impoundment.

Based upon the information currently available, the method chosen to achieve the closure performance standard is described in the following pages. If any unexpected discovery or new information is developed which significantly changes the envisioned closure activities, a new public notice will be issued as per 40 CFR 265.112(c).

II CLOSURE ACTIVITIES

A. Sampling and Removal of Heavy Metals or Other Contamination

Since various salts of "heavy" metals may have been placed in the impoundment, the underlying soil must be checked for contamination above the naturally occurring background levels. Since these contaminants do not migrate as the volatile organics, the sampling for these constituents may be shallower.

1. Objectives of soil sampling:

The primary objective is to determine the extent of soil contamination, where contaminated soils are those soils with concentrations of hazardous constituents, as listed in Appendix VIII of 40 CFR 261, significantly greater than background concentrations. If Bermite wishes to demonstrate that any hazardous constituents left in the soils will not cause unacceptable risks to human health or the environment the data shall be of sufficient quality for the EPA and DHS to determine the environmental and health effect of the constituents.

2. Preliminary investigation of soils:

Analytical data from the June - July 1987 sampling episode may be of assistance in determining the concentrations of metals in the soil. Using data from all the boreholes, Bermite shall calculate the sample mean, standard deviation, and coefficient of variation with respect to the individual metals at each waste management unit sampled.

3. Additional background samples:

Samples shall be obtained from at least four additional background locations as described in the sample plan for the Burn Cage Area.

4. Surveying and mapping:

As discussed in the following sampling plans, Bermite shall provide detailed maps with appropriate scales of the surface impoundment areas, including exact locations (if possible) of the waste management units, all previous soil sampling locations, and survey markers. Boundaries of sampling areas shall be clearly delineated on the maps. The map shall also show topographical features. Four foot contour lines displayed on previous maps should be adequate.

5. Sample collection:

Soil samples shall be volumetrically representative, that is not favor one portion of the sample volume over another.

6. Laboratory analysis:

Soil samples for analysis of metals shall be prepared according to Method 3050 (EPA SW-846, 3rd edition) with the following conditions: Digest 5 grams of a representative sample of soil crushed to pass a 2mm screen in 50ml of acid. An equivalent amount of hydrogen peroxide shall be used for all samples with proper consideration for contamination of samples by reagents used in the digestion procedure.

7. Data interpretation:

Statistical methods shall be employed to determine whether metal or other constituent concentrations in soils are significantly greater than background. A one-tailed t-test (see Steele and Torrie, Principles and Procedures of Statistics, 1st Edition, Section 5.8 as referenced in Appendix IV of 40 CFR 264) for comparison of sample means shall be used unless Bermite obtains approval from DHS and EPA to use an alternate statistical test. A 95% confidence limit shall be employed and the coefficient of variation for each sample group shall be reported.

Cross-sections showing the locations determined to be contaminated shall be developed.

Repeat sampling and analysis if needed to establish the presence or absence of contamination compared to background soils and the vertical and horizontal extent of any contamination.

8. Removal:

Any area determined to be contaminated will be excavated and the soil disposed of at a hazardous waste disposal facility. Verification sampling may be required following excavation. Wind dispersion of soils, dusts or contaminants shall be minimized during loading and transport.

9. Appendix VIII and other hazardous constituents:

a. In general, owner/operators (o/o) may be required to analyze all soil, ground-water, and surface water samples for all Appendix VIII constituents. However if warranted and properly documented, the number of parameters analyzed during the closure process may be reduced. The reduction of the parameters would be based upon the results of waste sampling and analysis in conjunction with records of chemical management at the site.

   The o/o must demonstrate that either (1) certain constituents could not be present at the facility or that (2) analyses of certain constituents would not provide reliable analytical results regarding the presence of those constituents.

To demonstrate that certain constituents could not be present at the facility, the owner/operator may wish to provide information which includes but is not necessarily limited to:

- o The raw materials, intermediate products, byproducts, and final products used or produced at the facilities contributing wastes to the waste management unit (e.g., manifests, chemical purchase orders, record ledgers, etc.)
- o The degradation products of the constituents known to be present in the unit
- o Available waste sampling and analysis data

b. At least one sample from the area of highest concentrations of constituents found during the previous sampling shall be analyzed for all hazardous constituents listed in 40 CFR Part 261 Appendix VIII which are a threat to public health and any additional hazardous constituents determined to have been possibly present in the waste management unit, unless they have been eliminated per the above procedure.

This sample should be analyzed first. Appendix VIII or other hazardous constituents found in this sample shall be analyzed for in the other samples from this waste management unit.

B. Plan

Step 1: Prepare a two dimensional grid extending at least 5 feet beyond the limits of the original surface impoundment area:

- Prepare a plot plan of the area using an appropriate scale such as 1" = 10 feet.

- Specify and establish (if not already established) permanent benchmarks for surveying the exact locations of boreholes.

- Establish two baselines at right angles at a corner of the study area. Establish a scale interval of one foot along each baseline.

Step 2: Select 3 random and two judgmental locations:

- Draw two random numbers from a random numbers table or generator. Specify whether the x or y coordinate is chosen first. Use these numbers to locate one point along each of the baselines. Locate the intersection of two lines drawn perpendicular to these two baseline points. This intersection represents one randomly chosen location for collection of one soil core. If this location is outside the study area or

within 12 feet of another sampling location, disregard this sampling location and repeat the above procedure.

- Indicate on the grid an additional sampling location at the loading/unloading area of the former impoundment

- Indicate on the grid an additional sampling location at the area of highest readings found during the previous exploratory boring program.

Step 3: Submit above work product (including how the sampling points were determined) to DHS and EPA for approval prior to continuing.

- Notify DHS, EPA and the Los Angeles Regional Water Quality Control Board (RWQCB) at least 10 days prior to commencing field work.

Step 4: Collect soil samples at the former impoundment area.

- Samples from the former impoundment area shall be taken: 12" - 24" from the surface, and from the surface of the 1983 excavation: 0" - 12", and 12" - 24".

Step 5: Laboratory analysis and data evaluation:

- Analyze the 12" - 24" cores taken above, and archive the 0" - 12" samples, which may be analyzed at a later time if necessary.

- Samples analyzed for metals shall undergo an acid extraction such as method 3050 to obtain total metals, not a partial extraction as in method 1310.

- For each hazardous constituent, the sample means and standard deviation in both the study area and background area shall be calculated. Whittaker-Bermite shall determine, at the 95% confidence level whether or not there is a statistical difference between the two sample groups.

- Cross-sections showing the locations determined to be contaminated shall be developed.

Step 6: Repeat steps 2 - 5 as needed to establish the presence or absence of contamination compared to background soils and the vertical and horizontal extent of any contamination.

Step 7: Any area determined to be contaminated will be excavated and the soil disposed of at a hazardous waste disposal facility. In general, soil removal shall occur in 6-inch lifts. Verification sampling may be required following the excavation.

Wind dispersion of soils, dusts or contaminants shall be minimized during loading and transport.

Other conditions:

1. - Any further modification of this plan involving excavation or trenching which may release VOC to the atmosphere shall be submitted with full details prior to Agency approval and would require an appropriate permit from the South Coast Air Quality Management District or written certification that such permit is not required.

2. - Until closure certification is accepted by DHS and EPA for the 342 unit, Bermite shall prevent rainfall or rainfall run-on from washing contaminants further into the soil by the use of berms and/or tarps.

3. - Minor modifications to the sampling frequency and technique may occur, depending upon field conditions encountered, but Whittaker-Bermite shall endeavor to closely follow the general principles of this plan. The DHS and EPA shall be notified at Whittaker's earliest convenience of such modifications.

4. - Any obviously apparent "hot spots" must be addressed in the closure procedure.

5. - The background metals study discussed in the burn area plan shall be used to compare samples from other waste management units on the Bermite site, unless another acceptable background study is prepared.

I Introduction OPEN BURNING AREAS

As discussed in the closure plan submitted by Whittaker-Bermite, the company used open burning and detonation as a way to neutralize or deactivate explosive and reactive wastes generated in the course of ordinance production at the Saugus facility.

Although these activities have ceased and thhe facility is shut down, the company did not obtain an closure plan approval prior to closing. Whittaker-Bermite is now in the process of complying with the various procedural and administrative steps in order to formally close their RCRA waste management units.

Open burning and detonation of waste explosives is addressed in 40 CFR 265.382 and closure of these units is addressed at 40 CFR 265.381:

> At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash) from the thermal treatment process, or equipment.

The closure performance standard is at 40 CFR 265.111:

> The owner or operator must close his facility in a manner that:
>
> (a) Minimizes the need for further maintenance, and
>
> (b) Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere.
>
> (c) Complies with the closure requirements of Sections 265.197, 265.228, 265.258, 265.280, 265.310, 265.351, 265.381, and 265.404.

Since the burning cage, pans and rails have already been removed, Bermite must also furnish a report describing how these units were decontaminated or disposed of in accordance with the applicable 40 CFR 265 requirements.

1. Extent of Soil Contamination

In order to meet the above closure standards, the closure plan for these units must address the ash and residues left on the ground and, in the case of the former burn pits, buried as part of normal operations.

Whittaker-Bermite has completed an initial exploratory boring program to analyze subsurface samples for chemical contamination. Further sampling of the burning areas and the background soils must be performed in order to determine whether the metals detected in the burning areas constitute contamination or are present as naturally occurring minerals.

2. Meeting the closure performance standard

With regard to the contaminated soil, in order to meet the closure performance standard, the hazardous constituents must be prevented from posing a future threat by direct contact or by migration. In general, this threat can be prevented by techniques such as: capping the area, chemical fixation or immobilization, removal of the contaminated soil, or physical removal or destruction of the hazardous constituents in place.

In any situation where contaminants left in the ground pose a possible threat, a post-closure permit addressing maintenance and monitoring of environmental controls such as a cap, groundwater monitoring and land use restrictions would be required.

The method chosen to achieve the closure performance standard will depend upon the outcome of the additional soil investigations. At the present time it is envisioned that excavation of limited areas will be performed, involving a small number of truckloads of soil being taken to an approved disposal facility.

If any unexpected discovery or new information is developed which significantly changes the envisioned closure activities, a new public notice will be issued as per 40 CFR 265.112(c).

II Soil Sampling Plans

A. Objectives of soil sampling:

The primary objective is to determine the extent of soil cc-tamination, where contaminated soils are those soils with cc centrations of hazardous constituents, as listed in Appendix VIII of 40 CFR 261, significantly greater than background concentrations. If Bermite wishes to demonstrate that any ha ardous constituents left in the soils will not cause an_cceptable risks to human health or the environment the data shall be of sufficient quality for the EPA and DHS to determine ch environmental and health effect of the constituents.

3. Preliminary investigation of soils:

An lytical data from the July 7, 1987 sampling episode may be of assistance in determining the concentrations of metals in the soil. Using data from all the boreholes except 4, 7 and 16, Be nite shall calculate the sample mean, standard deviation, and co efficient of variation with respect to the individual metals at each waste management unit sampled.

:. Additional background samples:

Samples shall be obtained from at least four additional background .oc ations as described in the sample plan for the Burn Cage, Pans .nc Rails Area.

'. Surveying and mapping:

s discussed in the following sampling plans, Bermite shall ro'vide detailed maps with appropriate scales of the burning re s, including exact locations (if possible) of the waste anagement units, all previous soil sampling locations, and survey arkers. Boundaries of sampling areas shall be clearly delineated n the maps. The map shall also show topographical features. ou foot contour lines displayed on previous maps should be dequate.

. ample collection:

oil samples shall be volumetrically representative, that is, not av r one portion of the sample volume over another.

2. Verification surface samples may be required after the excavation to confirm the removal of contamination.

3. Equipment and personnel shall be decontaminated and the resulting solids and liquids shall be managed as hazardous waste if hazardous constituents are present.

4. Plans for items 1 - 3 shall be submitted to EPA for approval prior to execution.

5. If the above sampling effort shows significant penetration of contaminants into the soil, groundwater monitoring/cleanup may be required by EPA, DHS, or RWQCB.

Soil Sampling Plan

Step 1: Prepare a two dimensional grid extending at least 10 feet beyond the limits of the waste management unit area:

- Prepare a plot plan of the area using an appropriate scale such as 1" = 10 feet.
- Specify and establish (if not already established) permanent benchmarks for surveying the exact locations of boreholes and wells.
- Establish two baselines at right angles at a corner of the study area. Establish a scale interval of one foot along each baseline.

Step 2: Select 6 random locations:

- Draw two random numbers from a random numbers table or generator. Specify whether the x or y coordinate is chosen first. Use these numbers to locate one point along each of the baselines. Locate the intersection of two lines drawn perpendicular to these two baseline points. This intersection represents one randomly chosen location for collection of one soil core. If this location is outside the study area or within 6 feet of another sampling location, disregard this sampling location and repeat the above procedure.

- Indicate on the grid additional sampling location(s) at any "hot spot(s)" found during any previous exploratory sampling.

Step 3: Select 4 random background locations:

- Use the same background data as for the burn cage area plan.

Step 4: Submit above work products to DHS and EPA for approval prior to continuing.

- The submittal must also include a list of hazardous constituents for which the samples will be analyzed. The rationale for including or not including any specific compound associated with the waste management unit must also be provided.

- After approval, notify DHS, EPA and the Los Angeles Regional Water Quality Control Board (RWB) at least 10 days prior to commencing field work.

Step 5: Collect soil samples at the former waste management unit area for organics and metals analysis:

- Based on earlier analysis, continuous sampling at the waste management unit area for metals shall be done at 0 - 6", 6" - 12", 12" - 24", 24" - 36", continuing with 12-inch samples to a depth at least two feet below the bottom of the former burn pits.

- Samples shall be preserved and analyzed in accordance with SW-846.

Step 6: Laboratory analysis and data evaluation:

- Samples analyzed for metals shall undergo an acid extraction (Method 3050) to obtain total metals, not a partial extraction as in method 1310.

- For each hazardous constituent, the sample means, standard deviation and coefficient of variation in both the study area and background area shall be calculated. The owner/operator shall determine, at the 95% confidence level whether or not there is a statistical difference between the two sample groups.

- Cross-sections showing the locations determined to be contaminated shall be developed.

Step 7: Repeat steps 2 - 6 as needed to establish the presence or absence of contamination (compared to background metals in soil or organics in soil) or the vertical and horizontal extent of contamination.

Other conditions:

1. - Minor modifications to the sampling frequency and technique may occur, depending upon field conditions encountered, but the owner/operator shall endeavor to closely follow the general principles of this plan. The DHS and EPA shall be notified at Whittaker's earliest convenience of such modifications.

2. - Any obviously apparent "hot spots" must be addressed in the closure procedure.

3. - Unless a convincing rationale for doing otherwise is provided, the samples shall be analyzed for the following constituents:

   a. The same inorganics as for the 10/22/86 sampling, plus magnesium, boron, (as indicator parameters) and fluoride.

b. organics:

diphenylamine
butyl carbitol
dibutyl pthalate
diphenyl guinidine
quinone

c. At least one sample from the area of highest concentrations of constituents found during the previous sampling shall be analyzed for all hazardous constituents listed in 40 CFR Part 261 Appendix VIII which are a threat to public health and any additional hazardous constituents determined to have been possibly present in the waste management unit.

Appendix VIII or other hazardous constituents found in this sample shall be analyzed for in the other samples from this waste management unit.

d. reactivity, optional

II CLOSURE PROCEDURE - MODIFICATION

1. Any areas determined by the EPA or DHS to be contaminated shall be excavated to background levels, and the contaminated soil shall be taken to an appropriate disposal facility. Contaminated soil shall be removed in 6-inch lifts or as approved by the regulatory agencies.

2. Verification surface samples may be required after the excavation to confirm the removal of contamination.

3. Equipment and personnel shall be decontaminated and the resulting solids and liquids shall be managed as hazardous waste, unless it is shown than no hazardous constituents are present.

4. Plans for items 1 - 3 shall be submitted to DHS and EPA for approval prior to execution.

5. If the above sampling effort shows significant penetration of contaminants into the soil, groundwater monitoring/cleanup may be required by EPA, DHS, or RWQCB.

I Soil Sampling Plan

Step 1: Prepare a two dimensional grid extending 5 - 10 feet beyond the limits of the waste management unit area:

- Prepare a plot plan of the area using an appropriate scale such as 1" = 10 feet.
- Specify and establish (if not already established) permanent benchmarks for surveying the exact locations of boreholes and wells.
- Establish two baselines at right angles at a corner of the study area. Establish a scale interval of one foot along each baseline.

Step 2: Select 6 random locations:

- Draw two random numbers from a random numbers table or generator. Specify whether the x or y coordinate is chosen first. Use these numbers to locate one point along each of the baselines. Locate the intersection of two lines drawn perpendicular to these two baseline points. This intersection represents one randomly chosen location for collection of one soil core. If this location is outside the study area or within 6 feet of another sampling location, disregard this sampling location and repeat the above procedure.

- Indicate on the grid additional sampling location(s) at any "hot spot(s)" found during any previous exploratory sampling.

Step 3: Select 4 random background locations:

- Use the same background data as for the burn cage area plan.

Step 4: Submit above work products to DHS and EPA for approval prior to continuing.

- The submittal must also include a list of hazardous constituents for which the samples will be analyzed. The rationale for including or not including any specific compound associated with the waste management unit must also be provided.

- After approval, notify DHS, EPA and the Los Angeles Regional Water Quality Control Board (RWB) at least 10 days prior to commencing field work.

Step 5: Collect soil samples at the former waste management unit area for organics and metals analysis:

- Based on earlier analysis, continuous sampling at the waste management unit area for metals shall be done at 0 - 6", 6" - 12", 12" - 24", 24" - 36", continuing with 12-inch samples to a depth at least two feet below the bottom of the former detonation pits.

- Samples shall be preserved and analyzed in accordance with SW-846.

Step 6: Laboratory analysis and data evaluation:

- Samples analyzed for metals shall undergo an acid extraction (Method 3050) to obtain total metals, not a partial extraction as in method 1310.

- For each hazardous constituent, the sample means, standard deviation and coefficient of variation in both the study area and background area shall be calculated. The owner/operator shall determine, at the 95% confidence level whether or not there is a statistical difference between the two sample groups.

- Cross-sections showing the locations determined to be contaminated shall be developed.

Step 7: Repeat steps 2 - 6 as needed to establish the presence or absence of contamination (compared to background metals in soil or organics in soil) or the vertical and horizontal extent of contamination.

Other conditions:

1. - Minor modifications to the sampling frequency and technique may occur, depending upon field conditions encountered, but the owner/operator shall endeavor to closely follow the general principles of this plan. The DHS and EPA shall be notified at Whittaker's earliest convenience of such modifications.

2. - Any obviously apparent "hot spots" must be addressed in the closure procedure.

3. - Unless a convincing rationale for doing otherwise is provided, the samples shall be analyzed for the following constituents:

a. The same inorganics as for the 10/22/86 sampling, plus magnesium, boron, (as indicator parameters) and fluoride.

b. organics:

diphenylamine
butyl carbitol
dibutyl pthalate
diphenyl guinidine
quinone

c. At least one sample from the area of highest concentrations of constituents found during the previous sampling shall be analyzed for all hazardous constituents listed in 40 CFR Part 261 Appendix VIII which are a threat to public health and any additional hazardous constituents determined to have been possibly present in the waste management unit.

Appendix VIII or other hazardous constituents found in this sample shall be analyzed for in the other samples from this waste management unit.

d. reactivity, optional

II CLOSURE PROCEDURE - MODIFICATION

1. Any areas determined by the EPA or DHS to be contaminated shall be excavated to background levels, and the contaminated soil shall be taken to an appropriate disposal facility. Contaminated soil shall be removed in 6-inch lifts or as approved by the regulatory agencies.

2. Verification surface samples may be required after the excavation to confirm the removal of contamination.

3. Equipment and personnel shall be decontaminated and the resulting solids and liquids shall be managed as hazardous waste, unless it is shown that no hazardous constituents are present.

4. Plans for items 1 - 3 shall be submitted to DHS and EPA for approval prior to execution.

5. If the above sampling effort shows significant penetration of contaminants into the soil, groundwater monitoring/cleanup may be required by EPA, DHS, or RWQCB.

1. Standard of decontamination:

The analytical parameter of interest at this unit is lead. Sampling performed on June 2, 1987 has shown that surface lead within the tanks is below .1mg per 100 cm^2. "Background" samples were also taken on paved roads east and west of the Bermite facility.

In order to determine a background lead level not possibly influenced by automobile exhaust or affected by abrasion of the wiping material by the sampling surface, two additional samples shall be taken and analyzed. These shall be taken from the metal roof of a building near the Bermite offices on the site if possible or one of the steel magazines near the site of the lead azide neutralizing building. In order to serve as background samples for the dry storage units, these samples shall also be analyzed for magnesium and boron, as well as total lead. Results shall be reported as mg/ft^2.

In addition, larger wipe samples shall be taken, at least 1 ft^2 in size, and using distilled water to saturate the filter paper. This will provide a lower limit of detection and improved accuracy. Results shall be reported as mg/ft^2.

Surface samples found to be greater than the mean of these background samples will be judged to be contaminated.

Soil samples shall be compared with the background lead levels determined in connection with the study of the open burning areas.

Samples shall be prepared prior to analysis in a manner which yields total lead.

2. Equipment verification

a. tanks

- Additional wipe samples inside the tanks shall be analyzed. One shall be taken at the bottom surface, and a second shall be taken at the lowest point in the tank, or in the lowest corner of the tank.

b. troughs

- A wipe sample shall be taken shall be taken in each trough.

c. Alternatively, the equipment may be crushed and disposed at a hazardous waste facility if testing is not desired.

1. Standard of decontamination:

Based upon the unburned wastes reported to have been stored in these units, the inorganic analytical parameters of interest at these units are lead, with magnesium and boron as indicator parameters. Organic parameters to be analyzed are dibutyl phthalate and diphenylamine.

Background values for lead, magnesium and boron shall be those established for the background surface sampling for the lead azide treatment area. Surface samples found to be greater than the mean of these background samples or detection of the specified organic compounds will be judged to indicate contamination.

2. Sample plan:

All wipe samples taken shall be at least 1 ft^2 in size. This will provide a lower limit of detection and improved accuracy.

Lab results shall be reported as mg/ft^2.

Wipe samples for metals shall be taken with filter paper saturated with distilled water.

Organics shall be sampled by wiping with cheesecloth saturated with acetone. Organics shall be extracted to yield total concentrations and analyzed using GC/MS or GC using a flame ionization detector for the butyl phthalate and a nitrogen-phosphorus specific detector for the diphenylamine analysis.

Samples shall be prepared prior to analysis in a manner which yields total metals.

Buildings 223 and 236

For both buildings, at least one floor area and one corner area shall be sampled for metals and organics. Use different areas for metals and organic sampling.

Portable storage units

To confirm previous decontamination and sampling, select one of the six units at random and sample at least one floor area and one corner area for metals and organics. Use different areas for metals and organic sampling.

3. Closure procedure:

3. Containment System/Concrete verification

At least one 100-gram sample of loose dust/sediment present within the containment structure shall be sampled and analyzed for total lead.

The concrete containment structure itself shall be sampled by chiseling at least 100 grams off the surface of a $1ft^2$ area. Samples shall be taken at areas of possible drips or spills and low points. At least one sample shall be taken at the seam between the concrete base and the cinder block wall.

Samples shall be physically ground in the lab if necessary, per SW-846 and the total lead reported in mg/kg.

Alternatively, the concrete may be broken up and disposed at a hazardous waste facility if testing is not desired.

Areas of spills, leaks, cracks, seams or other discontinuities in the concrete base shall be noted and their location recorded so that soil beneath these spots may be sampled when the concrete is removed.

4. Soil verification

After the containment structure is removed, a minimum of three soil samples shall be taken. Any areas of possible contamination as noted above shall be sampled. In addition, the loading/unloading area of the treatment system shall be sampled by cores 0 - 6 inches and 6 - 12 inches and similarly analyzed.

Storage buildings which are determined to be contaminated shall be steam cleaned or otherwise washed and re-tested. Condensate or wash water shall be collected, analyzed for the constituents of interest and disposed as hazardous waste if hazardous waste constituents are detected. Alternatively, the storage units may be demolished and disposed of as hazardous waste.

Structures determined to be clean may be left in place following agency acceptance of certification by the Engineer and the Owner/operator.

QUALITY ASSURANCE/QUALITY CONTROL

Field QA/QC

Closure of the hazardous waste management units will require collection and analysis of ground water, soil, concrete, and wipe samples. Every sample will be labeled with the following information either prior to or at the time of sampling:

- sample number
- date of sample
- time of sample
- name of sample collector
- sample location
- sample depth (if applicable)

Sampling will include a minimum of one field blank per sampling team per day, one duplicate sample in every twenty samples collected or one per batch if batches of similar samples number less than twenty. One split sample in every twenty samples collected or one per batch if batches of similar samples number less than twenty.

Sampling teams will maintain a field log book which will contain calibration records, names of on-site personnel, a sample register, and any observations necessary for a complete account of field activities. The sample register will contain the sample number, sampling location, the type of container used, any processing of the sample by the collection team, and the date and time of collection for all samples.

All samples will be sealed to minimize the potential for contamination of and tampering with the sample. Seals will be such that they must be broken in order to open the sample container.

A chain of custody record will be kept for all samples. This record will include, at a minimum, the following information:

- sample number
- date of sample
- time of sample
- signature of sample collector
- location of sample
- sample type
- analysis required
- dates of possession

Lab QA/QC

Laboratory personnel will maintain a sample log book to note receipt of all samples, condition of all sample containers and labels at the time of receipt, and any discrepancies in sample documentation.

Laboratory personnel will perform a minimum of 10% replicate and spiked samples (5% for GC/MS analyses), 5% reagent blanks, and an external reference sample for each type of analysis performed, or as required by the State of California Hazardous Waste Laboratory Certification Program.

The Safety Plan submitted in section IV of the April 1987 revised Closure Plan and the following modifications are to apply to all site activities related to the execution of the approved Closure Plan.

I. AIR QUALITY MONITORING PROGRAM

A. General

An air quality monitoring program shall be implemented to provide baseline and on-going air quality data for site operations. The program shall include as a minimum, the following:

1. A preliminary survey of existing air quality conditions, prior to any surface disturbances and, if possible, under anticipated "worst case" weather conditions (hot, dry and stagnant), to be used to establish baseline levels for input into the respiratory protection selection process;

2. An on-going evaluation of on-site atmospheric contaminant concentrations during site remediation activities that involve significant surface disturbances; and

3. Monitoring of downwind air quality conditions during significant surface disturbances.

B. Specific Air Monitoring Requirements

1. Baseline Data

Prior to any significant operations, the site shall be surveyed for near-ground level concentrations of total hydrocarbons and specific compounds as appropriate. This initial survey shall include at least 5 monitoring points on site and at least 5 downwind (200-ft. perimeter) monitoring points. Results from the preliminary survey shall be evaluated and a determination of required protection levels for site operations shall be made by the Safety Officer.

2. On-going Air Monitoring

a. Total Hydrocarbons

Monitoring of total hydrocarbons shall be provided by the use of portable instruments located at the site. Specific monitoring techniques, frequency and locations shall be determined by the Safety Officer, based on the initial survey results, site layout, prevailing winds and other site conditions.

b. Peak Level Evaluations

Periodic evaluations of appropriate specific site contaminant levels shall be conducted during high site activity levels by

use of detector tubes or equivalent devices. This testing shall be conducted at intervals and locations deemed appropriate by the Safety Officer who will adjust these intervals and locations as appropriate based on the levels of contaminants detected and the current operations.

Ambient air monitoring down-wind from the edge of the site shall be performed during periods of high site activity as conditions warrant. If this monitoring indicates higher than baseline levels of any contaminant, immediate steps shall be taken to determine the cause, make changes to site operations, warn unprotected personnel and initiate evacuation procedures if necessary. Specific procedures to be implemented shall be determined by the Safety Officer and Project Manger for each incident.

c. Industrial Hygiene Sampling

Representative personnel exposure monitoring, to determine eight-hour time weighted average (TWA) exposure concentrations for appropriate compounds shall be conducted by the Safety Officer or his designees if conditions warrant it. Conditions generally encountered at investigation/cleanup sites change so rapidly that TWA results no longer apply by the time results are received. The Safety Officer may, therefore, use detection tubes, direct reading devices, passive dosimeters or equivalent methods in lieu of personnel exposure monitoring. Sampling methods, analytical procedures, and sampling frequencies shall be consistent with OSHA and NIOSH requirements and procedures. (Sampling and Analytical Methods for TWA determinations are prescribed in Table 1.)

d. Regular Review of Selected Level of Protection

The Safety Officer will evaluate the monitoring results from "a", "b" and "c" on a regular basis to insure that the selected level of protection is appropriate.

II. GENERAL SAFE WORK PRACTICE

A. Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand to mouth transfer and ingestion of material is prohibited in any area where the possibility of contamination exists.

B. Hands must be thoroughly washed upon leaving a contaminated or suspected contaminated area before eating, drinking, or any other activities transpire.

C. Thorough washing of the entire body should be accomplished whenever decontamination procedures for outer garments are in effect. The washing should occur as soon as possible after the final wearing of protective garments.

D. Legible and understandable precautionary labels shall be prominently affixed to containers of raw materials, intermediates, products, mixtures, scrap, waste, debris, and contaminated clothing.

E. Contaminated protective equipment shall not be removed from the regulated area until it has been cleaned or properly packaged and labeled.

F. Removal of materials from protective clothing or equipment by blowing, shaking, or any other means which may disperse materials into the air is prohibited.

G. Daily inspections of excavations shall be made. If there is evidence of possible cave-in or slides, all work in the excavation shall cease until the necessary safeguards have been taken.

H. As appropriate, equipment on site shall be bonded and grounded, spark proof, and explosion resistant.

I. Adequate fixed and/or portable fire fighting equipment shall be available at all work sites.

J. Portable or fixed emergency shower/eyewash stations shall be strategically located throughout the regulated area.

K. A deluge shower or hose and nozzle shall be available if needed in the Contamination Zone to wash down heavily contaminated personnel before doffing protective clothing.

L. All trenching and excavation work must comply with regulatory agency rules.

M. The walls and spaces of all excavations and trenches more than 5 feet deep and into which employees will enter shall be guarded by shoring, sloping of the ground (1:1), or some other equivalent means.

N. All entries by workers into trenches or excavation greater than five feet deep are subject to the provisions of Confined Space Entry Procedures.

O. Trenches more than five feet deep shall have ladders or steps located so as to require no more than 25 feet of lateral travel between means of egress.

P. All trenches shall be backfilled as soon as practical after work is completed and all associated equipment removed.

Q. Personnel on-site must use the "buddy" system when wearing any respiratory protective equipment. Communications between members must be maintained at all times. Emergency communications should be prearranged in case of radio breakdown or lack of radios. Visual contact must be maintained between "pairs" on-site and each team should remain in close proximity to assist each other in case of emergencies.

R. Personnel should be cautioned to inform each other of subjective symptoms of chemical exposure such as headache, dizziness, nauseas, and irritation of the respiratory tract, eyes, or skin.

S. No excessive facial hair which interferes with a satisfactory fit of the mask-to-face seal, will be allowed on personnel required to wear respiratory protective equipment.

T. All respiratory protection selection, use, and maintenance shall meet the requirements of established procedures, 29 CFR 1910.134 and Title 8 CAC 5144, and recognized consensus standards (AIHA, ANSI, NIOSH).

U. Appropriate work areas for support, contamination reduction and exclusion will be established.

V. Personnel on-site are to be thoroughly briefed on the anticipated hazards, equipment requirements, safety practices, emergency procedures and communications methods, initially and in daily briefings.

W. Any unnecessary skin contact with contaminated soil or equipment or surface and groundwater shall be avoided.

X. Appropriate footwear will be worn on-site at all times.

Y. The ambient temperature will be monitored and the necessary controls to reduce employee heat or cold stress will be implemented. Rest areas, drinking water, washing facilities and toilets shall be provided.

Z. At all times appropriate measures such as water spraying shall be provided to prevent the blowing of dust or other contaminants from the waste management units undergoing closure.

III. PERSONAL PROTECTIVE EQUIPMENT

A. Introduction

It is important that personal protective equipment and safety requirements be appropriate to protect against the potential hazards at the site. Protective equipment will be selected based on the contaminant type(s), concentration(s), and routes of entry. In situations where the type of materials and possibilities of contact are unknown or the hazards are not clearly identifiable, a more subjective determination must be made of the personal protective equipment.

B. Levels of Protection*

Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

Level B: Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection.

Level C: Should be selected when the type(s) of airborne substance(s) is known, the concentration(s) is measured, and the criteria for using air-purifying respirators are met.

Level D: Should not be worn on any site with respiratory or skin hazards. This is primarily a work uniform providing minimal protection.

Bermite or its contractors will provide its employees with appropriate personal protective equipment as required. Only NIOSH/MSHA certified respiratory protective equipment will be utilized.

*As defined by USEPA Interim Standard Operating Safety Guide, Revised September 1982.

C. Protective Level B Selection Criteria and Equipment

Level B protection (full-face self-contained breathing apparatus) should be worn in atmospheres when unknown

contaminants exceed 5 ppm but a totally encapsulated suit (Level A) is not warranted.

Protective Equipment Level B

1. Full-face, self-contained breathing apparatus (MSHA/NIOSH approved)
2. Gloves - Outer (chemical-protective)
3. Gloves - Inner (tight-fitting, chemical-resistant type)
4. Non-porous chemical-resistant disposal hooded jacket and pants (yellow rain-suit type)
5. Hard hat fitted with face shield
6. Boots - Outer (chemical-protective)
7. Boots - Inner (chemical-protective, steel toe and neoprene)

D. Protective Level C Selection Criteria and Equipment

Level C protection (full-face, air-purifying respirator) should be worn routinely in an atmosphere only after the type(s) of air contaminant(s) is identified and concentrations measured. To permit flexibility in prescribing a Level C Protection at certain environmental incidents, a specialist could consider air-purifying respirators for use in unidentified vapor/gas concentrations of few parts per million. The guideline of total vapor/gas concentration of background to 5 ppm above background should not be the sole criterion for selecting Level C. Since the individual contributors may never be completely identified, a decision on continuous wearing of Level C must be made, after assessing all safety considerations, including:

- The presence of (or potential for) organic or inorganic vapors/gases against which a canister is ineffective or has a short service life.
- The known (or suspected) presence in air of substances with low TLV or IDLH levels.
- The presence of particulates in air.
- The errors associated with both the instruments and monitoring procedures used.

- The potential for higher concentrations in the ambient atmosphere or in the air adjacent to specific site operations.

The continuous use of air-purifying respirators (Level C) should be based on the identification of the substances contributing to the total vapor/gas concentration and the application of published criteria for the routine use of air-purifying devices. Unidentified ambient concentrations of organic/vapor or gases in air approaching or exceeding 5 ppm above background require Level B protection.

Protection Equipment Level C

1. Full-face, air-purifying respirator (MSHA/NIOSH approved).
2. Gloves - Outer (chemical-protective)
3. Gloves - Inner (tight-fitting, chemical-resistant type).
4. Tyvek Coveralls
5. Safety glasses, face shield or chemical goggles.
6. Hard Hat
7. Boots - Outer (chemical-protective)
8. Boots - Inner (chemical-protective, steel toe and neoprene)

E. Protective Level D Selection Criteria and Equipment

No indication of airborne health hazards present.

No indications above background on the photoionizer and/or organic vapor analyzer.

Continuous area and personnel monitoring is required while wearing Level D protection.

Personal Protective Equipment:

1. Appropriate footwear as determined by the SSO.
2. Boots - outer (chemical-protective disposable), where applicable.
3. Safety glasses, safety goggles, or faceshield.

4. Hard Hat - where required by 29 CFR 1910.

5. Gloves - where applicable, may not be required for equipment operators.

F. Specific Field Safety Procedures

1. Personnel Protection Levels

The SSO or his designee will monitor the worker's breathing zone for organic vapors continuously or periodically (daily - minimum) as conditions dictate. Monitoring will by by Organic Vapor Analyzer (OVA) equipped with a flame ionization detector and based upon the following criteria, adjust respiratory protection accordingly.

LEVEL	READING (ppm as TCE*)
Level A	
Level B	Greater than 500 ppm
Level C	50 to 500 ppm
Level D	0 to 50 ppm

* Bag sample analysis of borehole vapors from the 317 area submitted to West Coast Analytical Labs indicated that the constituents were essentiall 80% trichloroethylene and 20% perchloroethylene. The OSHA-PEL and ACGIH-TLV for both compounds is 50 ppm. Full face respirators with organic vapor cartidges are acceptable per 29 CFR 1910.134 for concentrations up to 500 ppm.

IV. WORK ZONE AND DECONTAMINATION PROCEDURES

A. General

A site must be controlled to reduce the possibility of exposure to any contaminants present and their transport by personnel or equipment from the site. The Safety officer is responsible for deterrmining when this section of the Health and Safety Plan is applicable and ensuring that the procedures are strictly adhered to.

A control system is required to assure that personnel and equipment working on the hazardous waste site are subjected to appropriate health and safety surveillance.

The possibility of exposure or translocation of contaminants can be reduced or eliminated in a number of ways, including:

- o Setting up security or physical barriers to exclude unnecessary personnel from the general area.
- o Minimizing the number of personnel and equipment on-site consistent with effective operations.
- o Establishing work zones within the site.
- o Establishing control points to regulate access to work zones.
- o Conducting operations in a manner to reduce the exposure of personnel and equipment.
- o Minimizing the airborne dispersion of contaminant(s).
- o Implementing appropriate decontamination procedures.

B. Field Operations Work Areas

Work areas (zones) will be established based on anticipated contamination. Within these zones prescribed operations will occur utilizing appropriate personal protective equipment. Movement between areas will be controlled at checkpoints (Figure 1). The planned zones are:

1. Exclusion Area or EA (contaminated);
2. Contamination Reduction Area or CRA; and
3. Support Area or SA (non-contaminated).

1. Exclusion Area (EA)

The Exclusion Area is the innermost area of three concentric rings and is considered contaminated, dirty or "hot". Within this area, the prescribed level of protection must be worn by any entering personnel. An entry checkpoint will be established at the periphery of the Exclusion Area to control the flow of personnel and equipment between contiguous zones and to insure that the procedures established to enter and exit the zones are followed. The Exclusion Area boundary will be established initially based on the presence of the contaminant(s) within the area. Subsequent to initial operations the boundary may be readjusted based on observations and/or

measurements. The boundary will be physically secure and posted. All potentially hazardous operations will take place in this area.

2. Contamination Reduction Area (CRA)

Between the Exclusion Area and the Support Area is the Contamination Reduction Area. The purpose of this zone is to provide an area to prevent or reduce the transfer of contaminants which may have been picked up by personnel or equipment returning from the Exclusion Area. All decontamination activities occur in this area.

The boundary between the Support Area and the Contamination Reduction Area is the contamination control line. This boundary separates the possibly-contaminated area from the clean zone. Entry into the Contamination Reduction Zone from the clean area will be through an access control point. Personnel entering at this station will be wearing the prescribed personal protective equipment for working in the Contamination Reduction Area. Exiting the Contamination Reduction Area to the clean area requires the removal of any suspected, or known, contaminated personal protective equipment and compliance with decontamination procedures.

3. Support Area (SA)

The Support Area is the outermost of three rings and is considered a non-contaminated or clean area. It contains the Commands Post (CP) for field operations and other elements necessary to support site activities. Normal street or Level D work clothes are the appropriate apparel within this zone.

C. Zone Dimensions

Considerable judgment is needed to assure safe working distances for each zone, balanced against practical work considerations. Physical and topographical barriers may constrain ideal locations. Field/laboratory measurements combined with meteorological conditions and air dispersion calculations will assist in establishing the control zone distances.

D. Decontamination Procedures

1. Introduction

As part of the system to prevent or reduce the physical transfer of contaminants by people and/or equipment from on-site, procedures will be instituted for decontaminating anything leaving the Exclusion Area and Contamination Reduction Area. These procedures include the decontamination of personnel, protective equipment, monitoring equipment, clean-up equipment, etc. Unless otherwise demonstrated, everything leaving the Exclusion Area should be considered contaminated and appropriate methods established for decontamination. In general, decontamination at the site consists of rinsing equipment, personnel, etc., with copious amounts of water and washing same with decontamination solution and detergent water solution.

2. Procedure

All personnel must enter and exit the site under a prescribed ordered protocol to insure that they will be properly decontaminated upon leaving the site. When entering the site, personnel enter the contamination reduction zone through the personnel decontamination van or area which will be located at the boundary between the Support Area (SA) and the Contamination Reduction Area (CRA). Personnel must be wearing steel-toed safety boots and a standard work uniform. The personnel decontamination van or area (DECON) is the only pathway from the Support Area to the Contamination Reduction Area. The DECON is divided into two halves, the half contiguous with the support area, and the half contiguous with the Contamination Reduction Area. Upon entering the DECON, personnel must don disposable polyethylene booties and disposable latex gloves before entering the CRA half of the DECON. Personnel may then move through the CRA half of the DECON, and move into the CRA. The CRA immediately outside of the DECON and adjacent to the entrance to the Exclusion Area (EA) is known as the Hotline. It is in this area that the donning and doffing of most safety equipment occurs. Personnel then don the appropriate safety gear for the level of protection mandated for the task. For typical Level C protection, personnel will don a Tyvek coverall, neoprene calf-high boots, stored until needed on a boot-rack in the CRA, cotton work gloves under PVC or other appropriate chemical/solvent resistant gloves, full-face twin cartridge respirator, or half-face twin cartridge respirator and safety goggles, and a hard hat. The sleeve cuffs and pant cuffs of the Tyvek coverall are taped to the outside of the gloves/boots for further protection. If a radio is worn, it is worn under

the coverall and operated through the coverall (this works well in practice, the Tyvek does not interfere with voice transmission and the radios remain uncontaminated). The Safety Officer or Custodian - Hotline Technician will assist personnel in donning gear as required. Personnel may then enter the Exclusion Area. Upon leaving the exclusion area and entering the CRA, personnel step into a series of two boot washes filled with decon solution and brush their boots off by hand. Then, personnel file past a number of lined refuse containers, remove other boots, suit, and gloves and dispose of suit and tape. Cotton and PVC gloves are placed in containers to save for later cleaning. Boots are carried to the boot rack and stored. The hard hat, respirator and goggles are doffed and hung up on another rack. Personnel then enter the CRA side of the DECON, still wearing the polyethylene boot liners and latex gloves. Just before stepping into the SA side of the DECON, where showers and lockers are located, personnel may then doff booties, gloves, and work uniforms and must shower thoroughly before leaving the site for the day.

3. Decontamination Solutions

Based on EPA recommendations for decontamination procedures the solution for on-site equipment decontamination will be follows:

For every 10 gallons of water, add 4 pounds of sodium carbonate (soda lime) and 4 pounds of trisodium phosphate, stir until evenly mixed.

This solution is designed to react with and neutralize the inorganic acids and to remove the organic hydrocarbons.

If contaminants are known then a specific detergent and/or solvent can be used to decontaminate.

The spent solution, brushes, sponges, containers, stands, etc., used in the decontamination process must, until shown otherwise, be considered contaminated and must be properly disposed.

V. EMERGENCY RESPONSE PLAN

A. Site Emergency Warning Systems

The site Safety Officer shall establish an effective site emergency warning system. One or more possible warning

systems may be utilized depending on the worksite conditions or emergency involved.

1. Verbal communications.

2. Verbal communications assisted with a bull horn.

3. Radio communications.

4. Vehicle horns.

5. Portable hand-held compressed gas horns.

Verbal instructions with or without assistance are used to deal with specific incidents.

Radio communications are used on-site to give instructions and directions. Emergency radio communications are prefixed as such and have priority over operations communications.

Horn signals are used to signify an emergency warning.

One long blast is used on-site to signify emergency evacuation of the immediate work area to a predetermined location upwind, where a head count will be taken and further instructions given.

Repeated short blasts are used on-site or from off-site to signify evacuation of all personnel from the site to the hot line where further instructions will be given after a head count is taken.

B. Emergency Equipment

The following equipment shall be available at the work site; located in a single area, clearly identified, and separate from the operations area.

1. Appropriate and adequate fire fighting equipment.

2. First aid kits (including snake bite and chemical burn kit).

3. Emergency oxygen kit. (including resuscitation equipment).

4. Fire blankets.

5. Litters.

6. Portable two-way radio equipment or pagers.

7. Combustible gas and oxygen detector alarm. Auto alarm set at 20% LEL and 19.5% oxygen (OSHA limits) if confined space entry is anticipated.

8. Organic vapor detection instruments - HNU photoionizer detector or Foxboro Analytical (formerly Century Systems) OVA (preferred).

9. Inorganic and organic vapor detector tubes and air supply pumps - Draeger and/or MSA.

10. Equipment for spill cleanup (including shovels, empty drums, absorbent material, etc.).

VI. RECORDKEEPING - Whittaker will comply with and direct all contractors and subcontractors to comply with these requirements:

A. General - Recordkeeping shall be consistent with OSHA regulations in all respects. The following permanent records will be maintained at the Health and Safety Officer's office or at the site as generated:

1. Respiratory Protection Training Records.

2. Respirator Assignment Records.

3. Respiratory Protection Medical Evaluations.

4. Safety Inspection Reports.

5. Personnel Exposure Monitoring Records (consecutively numbered using a spiral or bound permanent log book).

6. OSHA 200 - Current to within 24 hours.

7. Accident reports consistent with the established procedure.

B. Medical Records

Permanent medical records shall be maintained in confidential files by the contractor's physician and by the Corporate Health and Safety Manager.

VII. PREVENTION OF HAZARDS DURING LOADING AND UNLOADING WASTES

o Loading/unloading will take place inside of exclusion areas.

- Only classified and appropriately marked drummed materials will be loaded/unloaded onto/from approved transport vehicles.
- No leaking drums will be transported within the site.
- Drummed liquid wastes may be transferred to bulk storage by vacuum trucks fitted with hoses.
- Bulking of drummed wastes will occur only after the on-site safety officer has determined that the wastes are compatable.

VIII. PREVENTION OF ACCIDENTAL IGNITION OR REACTION OF IGNITABLE,REACTIVE OR INCOMPATIBLE WASTES DURING EXHUMATION, TREATMENT, AND FINAL DISPOSAL

The key element is the rapid classification of materials as acids, bases, inerts, cyanides, sulfides, oxidizers, flammables or organic peroxides; and the segregation of these hazard types, if found.

- All waste handling and processing will take place inside of exclusion areas.
- If available, site records will be used to classify materials in the immediate work area.
- If required during closure, bulk waste masses will be sampled in place and hazard-classed before exhumation, then placed into lined roll-offs or other containers for transportation to the new disposal site.
- If encountered, drummed wastes will be exhumed and staged in groups close to the excavation as possible to minimize movement of unclassified material. Drums will be staged inside of diked areas at 8 foot centers which will allow a minimum distance between drums of six feet.
- Staged drums will be numbered, opened with a bronze bung wrench and sampled. If possible, drums will be sampled through the bung. If the bung cannot be opened the drum will be pierced through the top with a bronze lance fitted to a shielded backhoe.
- Once a group of drums is characterized completely each drum will be marked with an appropriate hazard class/operation color code and segregated into like groups for processing.

- To avoid puncture of drums during exhumation, a backhoe fitted with a toothless bucket will be used to uncover the drums. When drums have been freed enough they will be craned out of the trench with nylon straps or parrot-beaked hooks and moved just enough so that a drum handling loader can grasp them. Punctured or leaking drums will be replaced where they lie by one of several methods:

  a) The contents of the leaking drum will be transferred to a new drum by a small pump whereupon both drums will be removed.

  b) The entire drum will be overpacked and removed.

  Any spilled material will be immediately absorbed with oil-dry and removed.

- To avoid ignition during processing, all processing equipment will be grounded. Only air-powered or hydraulic powered pumps will be used.

SAMPLING AND ANALYTICAL METHODS

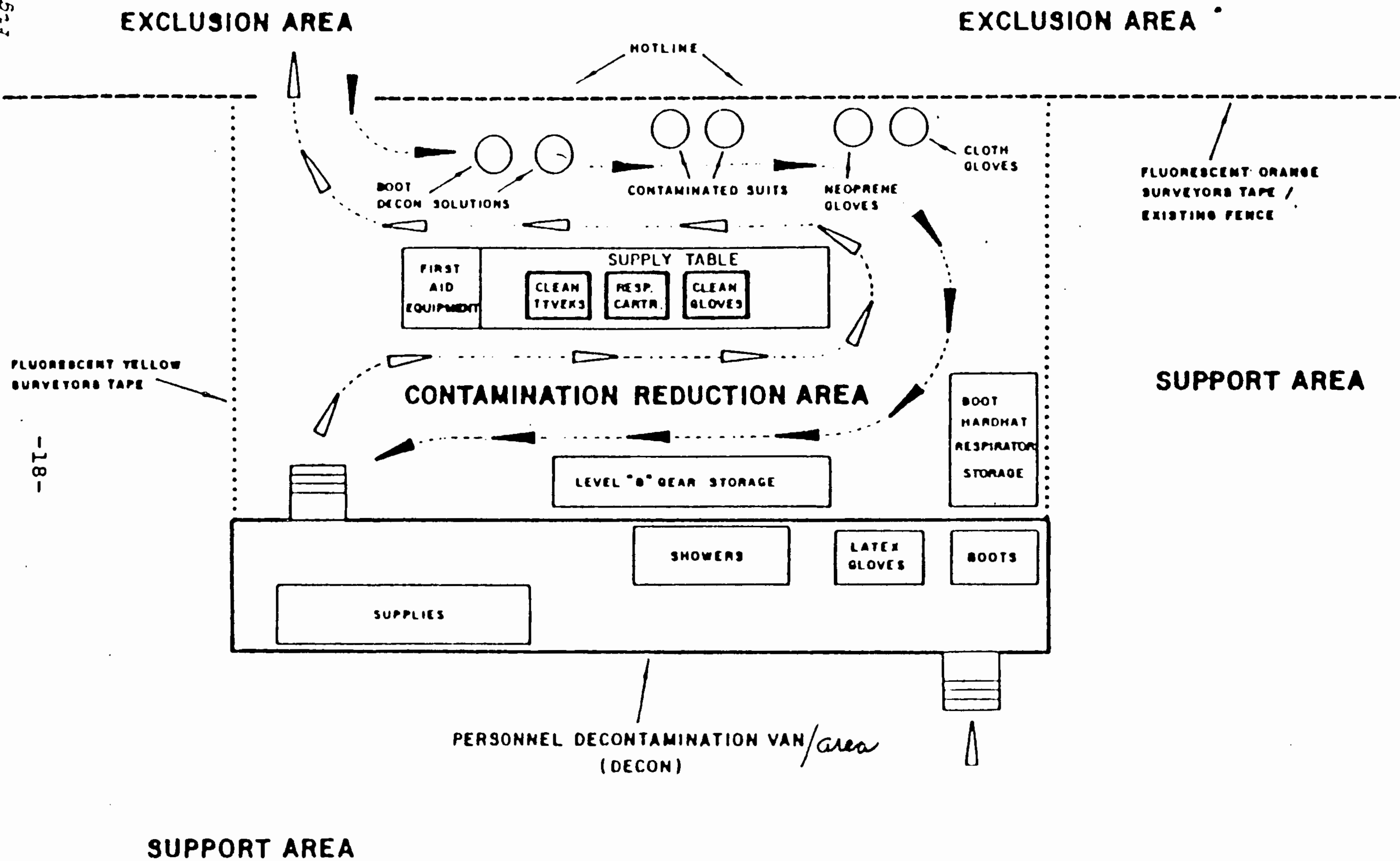
TABLE 1

Contaminant	Sampling Method		
	Grab	TWA	Analysis
Benzene	detector tube	charcoal tube	GC-FI
Ethylbenzene	detector tube Draeger 67-28381	charcoal tube	GC-FI
Naphthalene	----------	charcoal tube	GC-FI
Pentachlorophenol	----------	MCEF filter Bubbler-ethylene glycol	HPLC-UV
Phenol	detector tube Draeger CH 31501	Bubbler-NaOH	GC-FI
Polynuclear aromatics	----------	acrylonitrile-PVC filter	GC-MS
acenaphthene			
chrysene			
fluoranthene			
fluorene			
phenanthrene			
Toluene	detector tube Draeger CH 27801	charcoal tube	GC-FI
Total Hydrocarbons	Century OVA	N/A	N/A
chlorinated hydrocarbon			GC-EC

*GC-FI: Gas chromatograph with a flame ionization detector.
GC-MS: Gas chromatography - high resolution mass spectrometry.
HPLC-UV: High pressure liquid chromatography with UV detector.

TYPICAL EXAMPLES OF COMPOUNDS TO BE MEASURED--ACTUAL COMPOUNDS MAY DIFFER

Figure 1



LAYOUT OF CONTAMINATION REDUCTION AREA

IX. Decontamination Plan

A. General

The following decontamination plan addresses the method and removal of residual waste materials from surfaces which were unavoidably contaminated during the closure activities. The operating plan for the closure activities includes planning to limit the amount of contaminated soil and equipment to the minimum, without undue constraint on the operating schedule. For example, equipment, if used to excavate and load contaminated soil will not be allowed to leave until decontaminated. These contaminated earth or waste materials will be loaded into leakproof containers on a slope loading pad. The pad will be constructed of asphalt pavement so that the pad area can be cleaned if material is dropped onto it during loading to prevent contamination of vehicle tires. The materials would be dumped or otherwise transferred onto the temporary storage areas or handled by another piece of equipment which does not leave that designated area of contamination. The tracking of contamination onto roads will thus be minimized.

B. Equipment Decontamination Procedures

All equipment accessing the contaminated areas or used during closure will be subject to these decontamination procedures. The company is responsible to ensure that all personnel, including contractors, subcontractors, and visitors meet these provisions.

Equipment used in the excavation, transfer, treatment, or handling of waste will be decontaminated before leaving the site or before being used in clean areas. Equipment used to excavate contaminated soil will be decontaminated before leaving the site. The decontamination procedures will be as follows.

Vehicular equipment will be driven onto an asphalt paved pad adjacent to a collection sump for contaminated water. This pad will be large enough to catch all overspray and drippage and will be sloped to drain into the adjacent sump.

Details of the decontamination pad(s) proposed to be constructed during the closure activities shall be submitted for approval prior to closure plan execution.

Large contaminated soil clumps may be removed with shovels, picks, and slice bars. The equipment and hand tools will then be cleaned with steam or high-pressure detergent washing equipment. Particular attention will be paid to cleats of tires and buckets or scoops, but all other parts of the equipment which reasonably may have had contact with the contaminated material will be thoroughly cleaned. The equipment will then be carefully inspected visually to assure the removal of foreign substances from all of its surfaces before being allowed to leave the pad. Washwater will be pumped from the collection sump solidification or disposal if shown to be non-hazardous.

The asphalt pad, after its final use will be cleaned and disposed of as non-hazardous waste if the washwater tests clean.

Process equipment used for handling or processing waste materials removed during the closure will be handled in one of two ways:

1. If the equipment is to be transported for reuse at another facility handling hazardous wastes, the external parts of the equipment which reasonably may have been contaminated (i.e., loading hoppers, valves, discharge hoses or chutes, etc.) will be steam or high-pressure detergent cleaned before dismantling and removal from the site.

2. If the equipment is to be reused for processing non-hazardous materials or at a facility other than a hazardous waste facility, the above procedures will be carried out as well as detergent cleansing and double-rinsing of all interior surfaces, pipes, hoses, and other parts in contact with waste materials.

Schedule of Closure Activies
Buildings 223, 236 and Six Portable Dry Storage Units

Item	Days After Closure Plan Approval
Begin verification sampling at dry storage units.	15
Complete verification sampling at dry storage units.	20
Submit lab results to agencies.	35
If decontamination is judged complete, submit closure certifications by engineer and owner.	60

Schedule of Closure Activies

Former Burning Areas: Cage, Pans and Rails, Pits and Detonation Area

Item	Days After Closure Plan Approval
Submit sampling and analysis plans to agencies for approval.	20
Receive approval and begin verification sampling at former burning areas.	30
Complete verification sampling.	60
Submit lab results to agencies.	75
Remove soils or materials judged to be contaminated.	135
Repeat verification sampling and analysis if necessary to confirm removal of contamination.	170
If decontamination is judged complete, submit closure certifications by engineer and owner.	180

Schedule of Closure Activies
Lead Azide Washwater Treatment Unit

Item	Days After Closure Plan Approval
Begin verification sampling tanks, troughs, containment, loading and background areas per closure plan.	15
Complete verification sampling.	45
Submit lab results to agencies.	75
Receive OK to continue. Begin removal and/or decon of tanks and containment system.	90
Sample soils beneath concrete. Obtain lab results and submit results to agencies.	120
Remove soils or materials judged to be contaminated.	135
Repeat verification sampling and analysis if necessary to confirm removal of contamination.	170
If decontamination is judged complete, submit closure certifications by engineer and owner.	180

Schedule of Closure Activies
317 Surface Impoundment, VOC Removal

Item	Days After Closure Plan Approval
Employ tarps, berms or other methods to prevent rainfall from spreading subsurface contamination.	10
Submit plan to agencies for determining extent and removal of VOC contamination.	20
Obtain agencies' approval to proceed.	45
Complete implementation of plan.	75
Submit evaluation of characterization and removal activities to DHS and EPA.	90
If necessary, revise or expand plan for further characterization and removal activities.	120
Obtain agency approvals for revised/expanded plan and begin implementation.	150
complete decontamination of VOC at the site.	180

Schedule of Closure Activies

317/342 Surface Impoundments, Additional Soil Sampling/Removal for Metals and Other Non-Volatile Constituents

Item	Days After Closure Plan Approval
Submit sampling and analysis plans to agencies for approval.	30
Begin soil sampling and analysis.	45
Complete determination and extent of metals or other hazardous constituent contamination.	110
Submit cross-sections showing locations determined to be contaminated and proposed removal plan, if soil not already managed under the VOC removal plan.	125
Begin removal of contaminated soils.	no more than 30 days after VOC removal completed.
Complete removal of contaminated soils	15 days after start
Submit certifications from owner and engineer for soils decontamination.	45 days after start

Schedule of Closure Activies
317/342 Surface Impoundments, Groundwater Monitoring Plan

Item	Days After Closure Plan Approval
Meet with DHS, EPA and RWQCB to discuss details of plan for characterizing the uppermost aquifer.	30
Based on above discussions, submit a plan to develop the necessary information.	60
Agencies will approve or modify and approve plan.	90
Complete execution of plan and submit report of findings and proposed groundwater monitoring system.	150
Agencies approve report (or require further characterization if necessary) and approve or modify and approve proposed gwm system.	180
If necessary, perform additional characterization and submit supplementary report.	240
Submit proposed interim status groundwater monitoring program.	240
Agencies approve or modify and approve gwm program.	270
Complete installation of gwm system, including development of wells.	270
Monitor groundwater for three years, or as approved by the above agencies. If no contamination is detected, owner/operator and engineer may certify closure complete.	

APPENDIX B

UNDERGROUND STORAGE TANK CLOSURE DOCUMENTATION FOR TANKS NEAR FORMER BUILDINGS NO. 4, 12, 224 AND 346

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

2250 ALCAZAR STREET
LOS ANGELES, CALIFORNIA 90033
Telephone : (213) 226-4111

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 2418
LOS ANGELES, CALIFORNIA 90051

THOMAS A. TIDEMANSON, Director
WYNN L. SMITH, Chief Deputy Director
HIAM BARMACK, Assistant Director
JAMES L. EASTON, Assistant Director

IN REPLY PLEASE
REFER TO FILE I-975-70

January 9, 1986

Bermite Division
Whitaker Corporation
22116 W. Soledad Cyn. Rd
Saugus, CA 91350

Attn: Mr. Larry Bohanan

Gentleman:

HAZARDOUS MATERIALS UNDERGROUND STORAGE
CLOSURE PERMIT(S) NO. 367B & 369B
FACILITY AT: 22116 WEST SOLEDAD CANYON RD

This office has reviewed the soil sample/groundwater laboratory report submitted on 12/10/85 required as part of the subject closure procedure.

We find that based on the information submitted, no further subsurface investigation is necessary. The storage tanks listed within the subject permit(s) are considered closed upon disposal of excavated soil (if applicable) as indicated below:

[ ] The use of soils removed during excavation is unrestricted and may be disposed of at an unclassified disposal facility.

[ ] Soils are not suitable as fill material and must be manifested and transported to a hazardous waste disposal facility permitted by the State Department of Health Services (DOHS) unless evidence is presented indicating DOHS has determined that the material may be disposed of at a less restricted facility. Copies of completed manifests shall be submitted to this office indicating legal disposal.

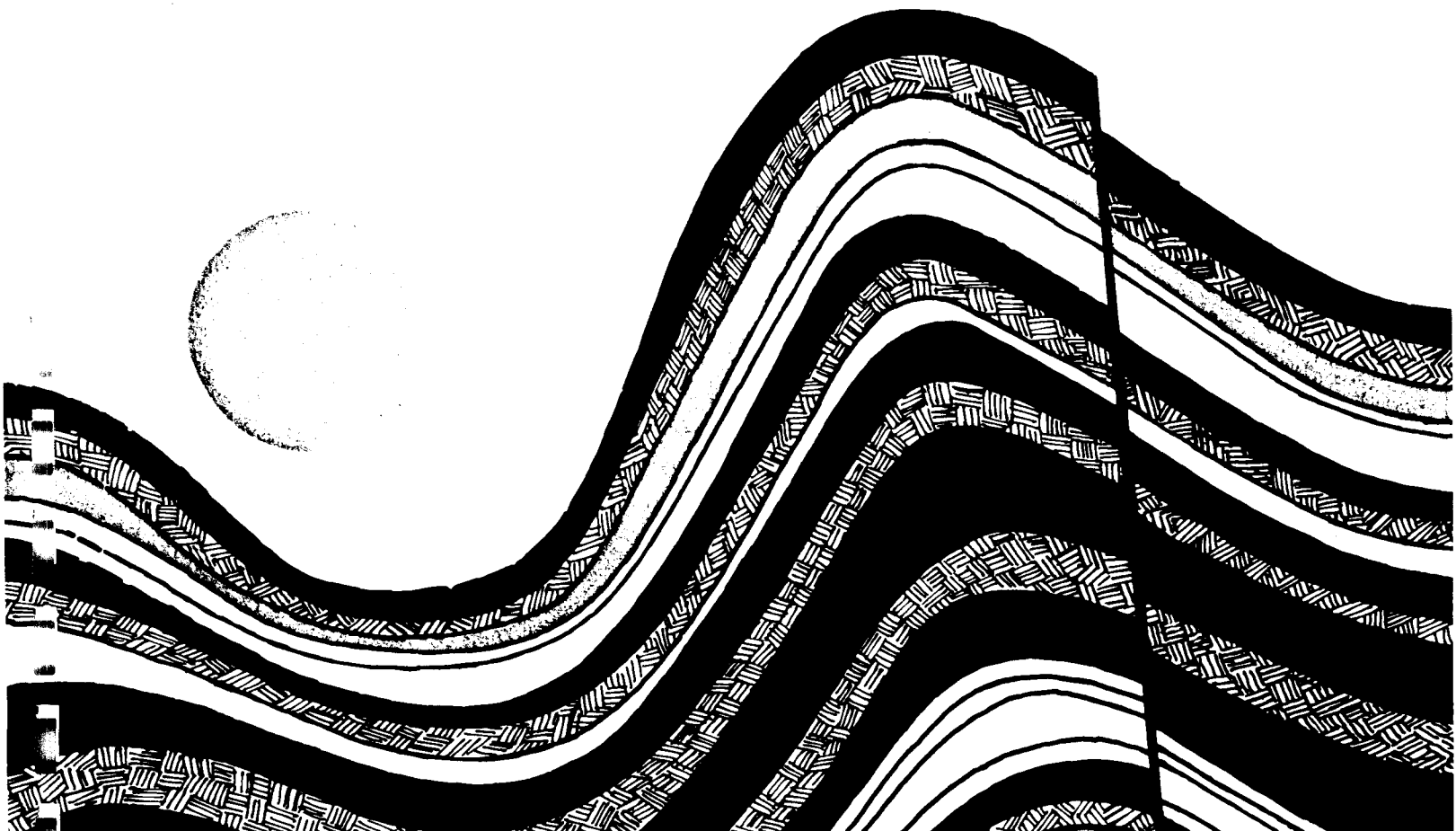
If you have any questions concerning these requirements please contact John Huff at (213) 226-4018 .

Very truly yours,

T.A. TIDEMANSON
Director of Public Works

M. Michael Mohajer
Supervising Civil Engineer III
Engineering Services Division

Leighton and Associates



LEIGHTON and ASSOCIATES
INCORPORATED
SOIL ENGINEERING GEOLOGY GEOPHYSICS GROUND WATER HAZARDOUS WASTES

December 6, 1985

Project No. 7851441-01

TO: Bermite
22116 Soledad Canyon Road
Saugus, California 91350

ATTENTION: Mr. John Pierson

SUBJECT: Subsurface Investigation of Abandoned Tanks at Buildings 4 and 12 and Removed Tanks at Buildings 224 and 346, Bermite Plant, 22116 Soledad Canyon Road, Saugus, County of Los Angeles, California

Introduction

In accordance with your authorization, we have conducted a leak detection investigation at 22116 West Soledad Canyon Road, Saugus, in the county of Los Angeles. The purpose of our work was to assist you in complying with Los Angeles County regulations pertaining to the closure requirements for removal and abandonment of the four subject underground storage tanks. The scope of our work included the following:

- Excavation, logging, and sampling of vertical borings at two underground tank sites where two tanks have been abandoned in place. Excavation, logging, and sampling of a vertical boring at two other separate tank sites where tanks have been completely removed and the excavation backfilled. Boring depths were conducted to a total depth of 20 to 45 feet below grade.

- Laboratory analysis of selected soil samples and water samples where ground water was encountered for the constituents of the tanks and their degradation products.

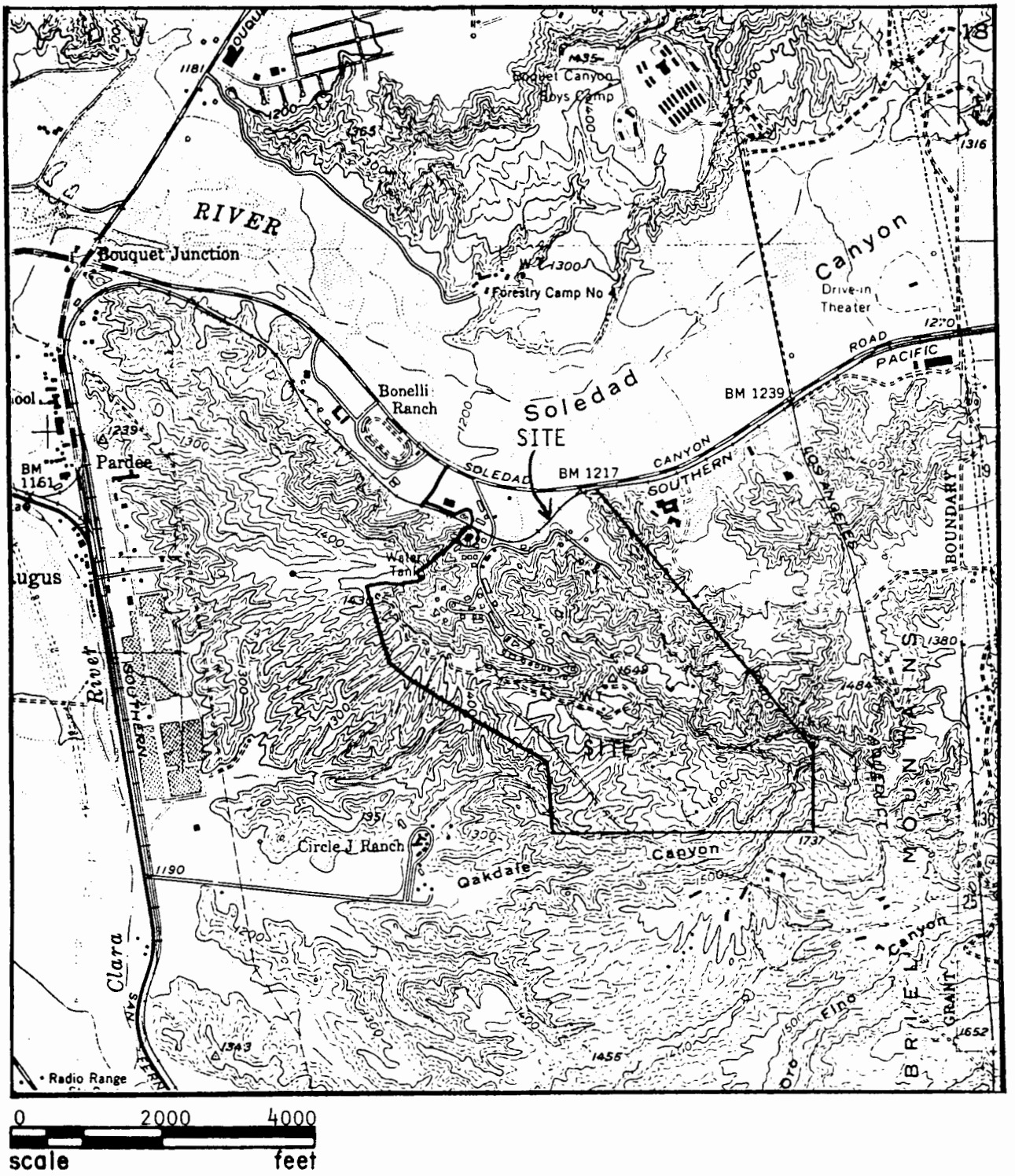
- Analysis of laboratory results and field data with respect to past site integrity.

- Research of available publications and documents.

- Preparation of this report summarizing our findings, conclusions, and recommendations regarding permanent site closure.

Accompanying Maps, Illustrations, and Appendices

7851441-01



INDEX MAP

OF

BERMITE

22116 SOLEDAD CANYON ROAD

SAUGUS AREA, COUNTY OF LOS ANGELES

Base Map: USGS 7½-Minute Newhall Quadrangle

LEIGHTON and ASSOCIATES
INCORPORATED

Site Conditions

The subject site is located in the Saugus area of the County of Los Angeles and consists of 1,200± acres bounded on the north by Soledad Canyon Road and on the south by Oakdale Canyon (see Page 2). Topographically, the site is separable into two distinct landforms: rugged, incised bedrock terrain throughout the majority of the site and essentially flat-lying alluvial-filled valleys in the northern portion of the site.

The subject site is currently used as a manufacturing area for explosives and munitions. Roads and buildings are located through the subject site. Elevations onsite range from approximately 1200 to 1700 feet above mean sea level. Vegetation ranges from sparse on ridgelines to dense within canyon bottoms. Table 1 summarizes location, size, content, and status of the onsite tanks. Details of each tank site are presented on Plates 2 through 5 and tank and boring locations are shown on the Boring Location Plan (Plates 6 and 7).

TABLE 1

Summary of Onsite Tanks

Tank Location	Tank Size (Gallons)	Tank Contents	Status
West of Building 4	6,000	Fuel Oil (Diesel)	Abandoned in place, filled with cement slurry, January 1985
North of Building 12	2,000	Gasoline	Abandoned in place, filled with cement slurry, January 1985
South of Building 224	500	Fuel Oil (Diesel)	Removed and excavation backfilled
South of Building 346	6,000	Heptane	Removed and excavation backfilled

The northerly portion of the site is underlain by recent alluvium deposited by the Santa Clara River. The alluvium is anticipated to be as great as 75 feet deep and consists of unconsolidated tan to brown sand, silty sand, gravel, and boulders. The remainder of the site is underlain by bedrock of the non-marine, Plio-Pleistocene Saugus Formation. The Saugus Formation consists of poorly-to-well-consolidated grey-to-light-brown conglomerate, sandstone, siltstone, and mudstone.

Ground water was encountered in Boring B-1 in the vicinity of Tank Site 4 at approximately 16 feet below the ground surface. Since the site is located along the Santa Clara River channel, ground water levels are anticipated to be significantly affected by seasonal fluctuations with high levels anticipated during winter and spring months.

Summary of Subsurface Exploration

The purpose of our subsurface exploration was to determine the past tank integrity at four separate tank sites. Our exploration was conducted with a continuous flight, hollow stem auger. The soils encountered in each boring were visually logged and classified and boring logs are presented in Appendix B. Relatively undisturbed samples were collected in clean brass rings with a split-barrel sampler. The soil samples were wrapped in aluminum foil, capped, properly identified, and placed in a cooler with blue ice until they were delivered to the approved laboratory for analysis. The sampler was washed in a TSP solution and rinsed with clear water after each sample was retrieved. The drill auger was steam cleaned after each boring was completed.

Four exploratory borings were drilled to total depths ranging from 20 feet to 45 feet. Soils encountered during our exploration consisted of brown, gravelly, silty sands in Borings B-1 and B-2, clayey sands, sandy clay, and silts in Boring B-3, and sandstone bedrock in Boring B-4. Backfill of all borings was made with a mixture of bentonite clay and native soil cuttings from the borings. One ground water sampling well was established at Tank Site 4 where ground water was encountered.. A detail of the sampling well is presented in Appendix D. Water samples were collected by hand bailing 24 hours after the well had been developed.

Laboratory Analysis

Several soils samples were collected in each boring. No chemical odors were detected in any of the samples. Selected water and soil samples were analyzed for the contents of the tanks in accordance with appropriate EPA test methods. Table 2 summarizes the results of the laboratory analysis of the selected samples.

TABLE 2

Summary of Laboratory Analysis

Sample Location	Constituents (mg/l)*						
	Petroleum Hydrocarbons	Oil and Grease	Benzene	Toluene	Xylene	Fuel Hydrocarbon	Heptane
B-1/SW-1 (Water)	<0.5	0.5	**	**	**	**	**
B-1@13' (Soil)	<10	<10	**	**	**	**	**
B-2@10' (Soil)	<10	<10	**	**	**	**	**
B-3@10' (Soil)	**	**	<1.0	<1.0	<1.0	<5.0	**

	Constituents (mg/l)*						
Sample Location	Petroleum Hydrocarbons	Oil and Grease	Benzene	Toluene	Xylene	Fuel Hydrocarbon	Heptane
B-3@25' (Soil)	**	**	<1.0	<1.0	<1.0	<5.0	**
B-4@13' (Soil)	**	**	**	**	**	**	<5
B-4@18' (Soil)	**	**	**	**	**	**	<5

* mg/l (milligrams per liter) = ppm (parts per million)
** not tested
Laboratory results are presented in Appendix C

General Conclusions

Based upon findings described above and the data reported in the text and the appendices, the following conclusions are presented:

1. Laboratory analysis for the parameters tested indicates that all soil samples tested were below the lower limit of detection of the analytical equipment. This level is just at the lower limit of detection of the analytical equipment and below the action level for the State Department of Health Services.

2. Ground water was encountered in Boring B-1 at 16± feet below the surface of Tank Site 4 on October 2, 1985. A water sample collected from this boring contained 0.5 mg/l of oil and grease. This level of contamination is below the State Department of Health Service action level of 10 mg/l.

3. The tanks abondoned onsite appear to have been properly abondoned with no significant evidence of leakage identified in the areas examined during the subsurface investigation.

Recommendations

Based upon the results of our investigation, the following recommendation is presented:

- Mitigation measures are unnecessary because the level of contaminant (oil and grease) found to be below the action levels set by the State Department of Health Services.

Leighton and Associates appreciates this opportunity to be of service to you on this project. If you have any questions regarding this report, please do not hesitate to contact us at your convenience.

Respectfully submitted,

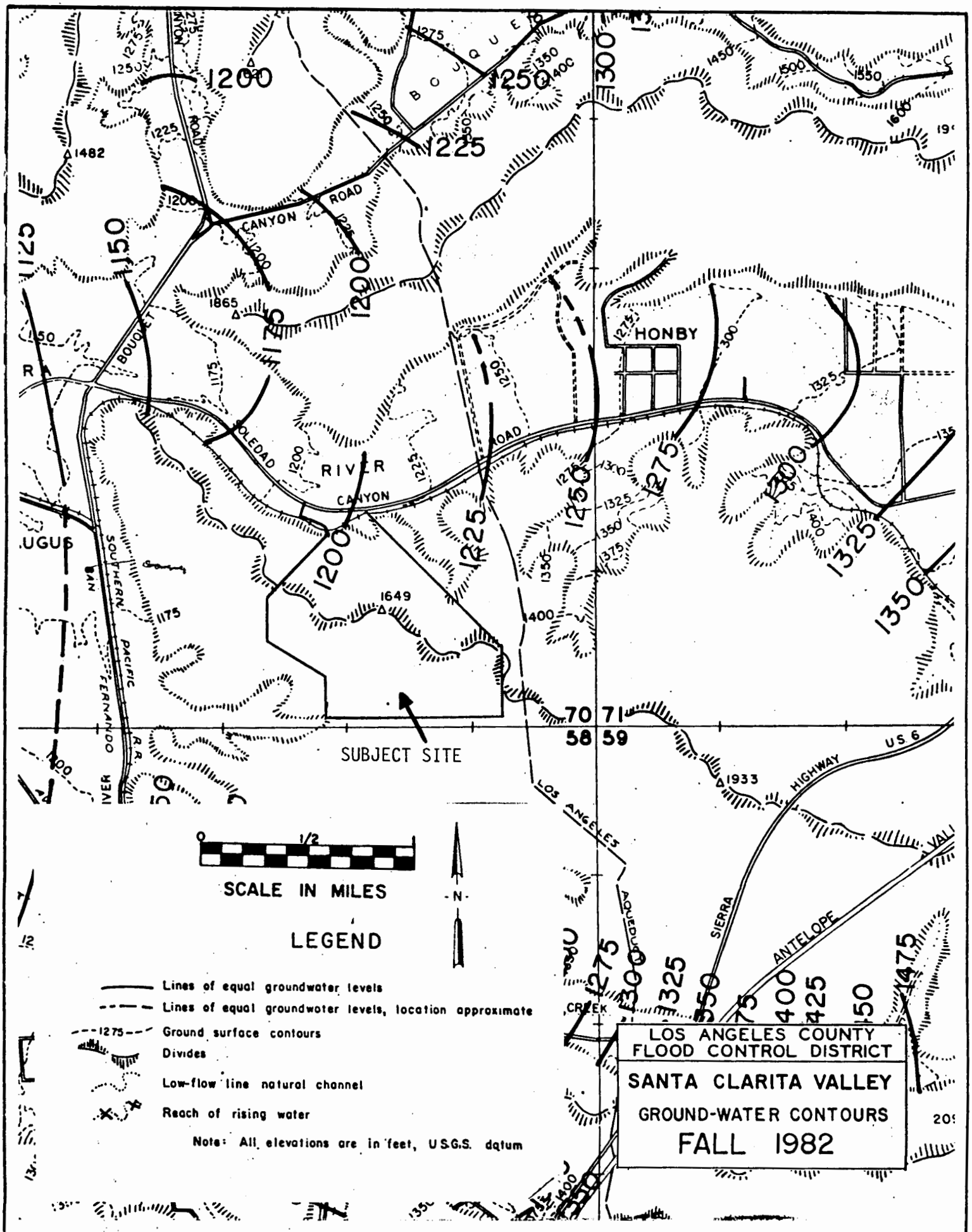
LEIGHTON AND ASSOCIATES, INC.

Bruce R. Hilton, CEG 1151
Chief Engineering Geologist

Thomas E. Mills
Hazardous Waste Service Manager

DER/TM/BH/jm

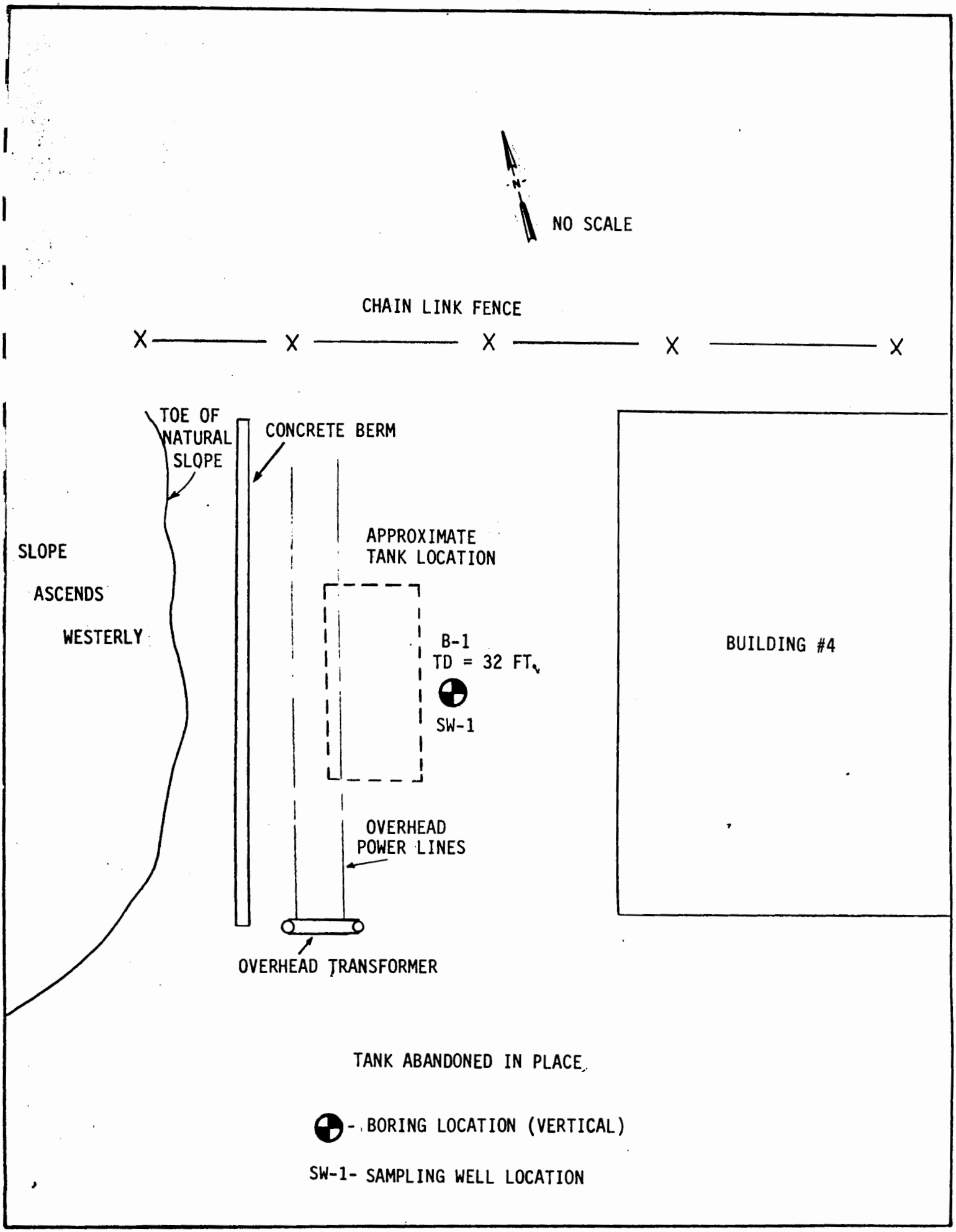
Distribution: (4) Addressee

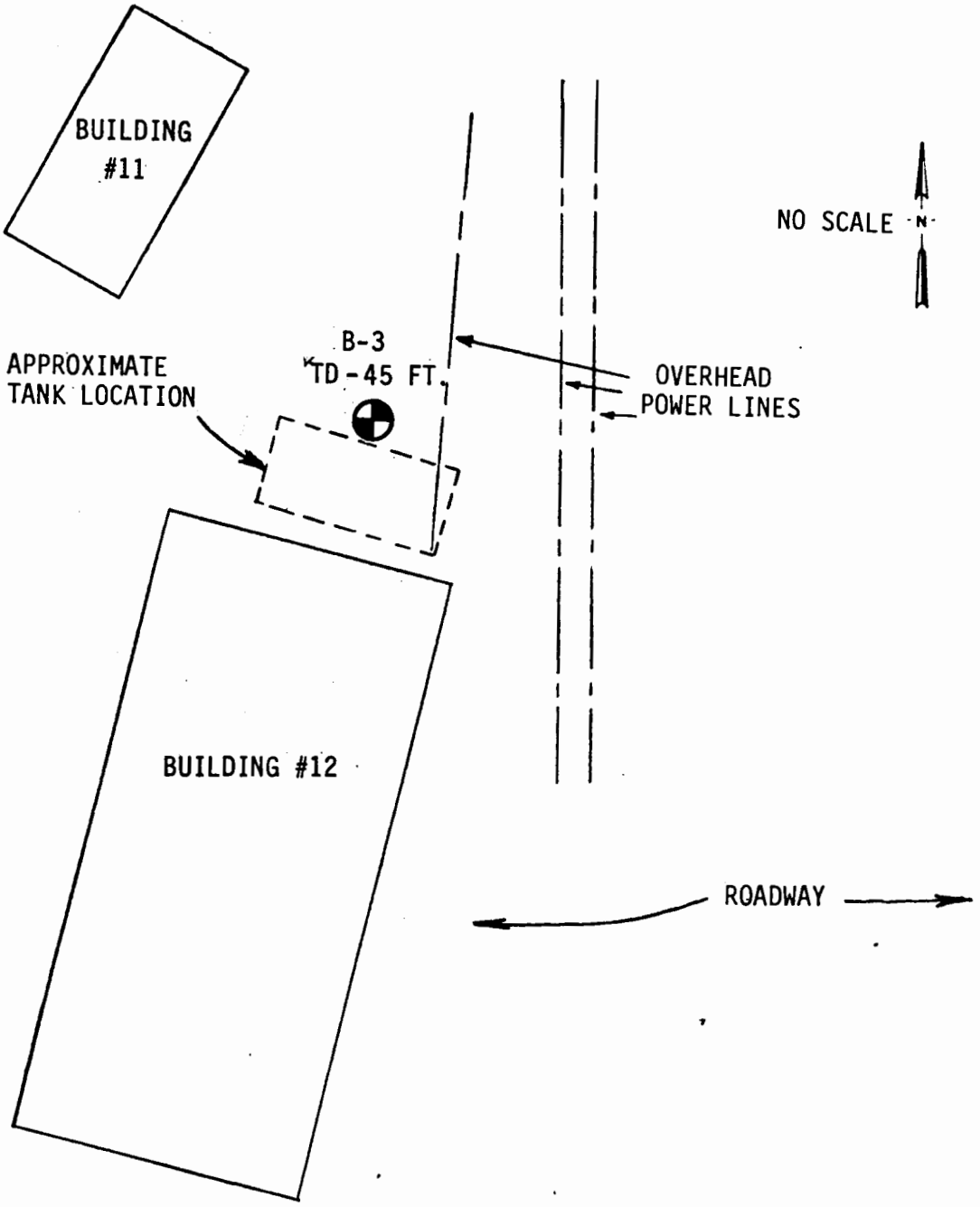


Project No: 7851441-01

Leighton & Associates

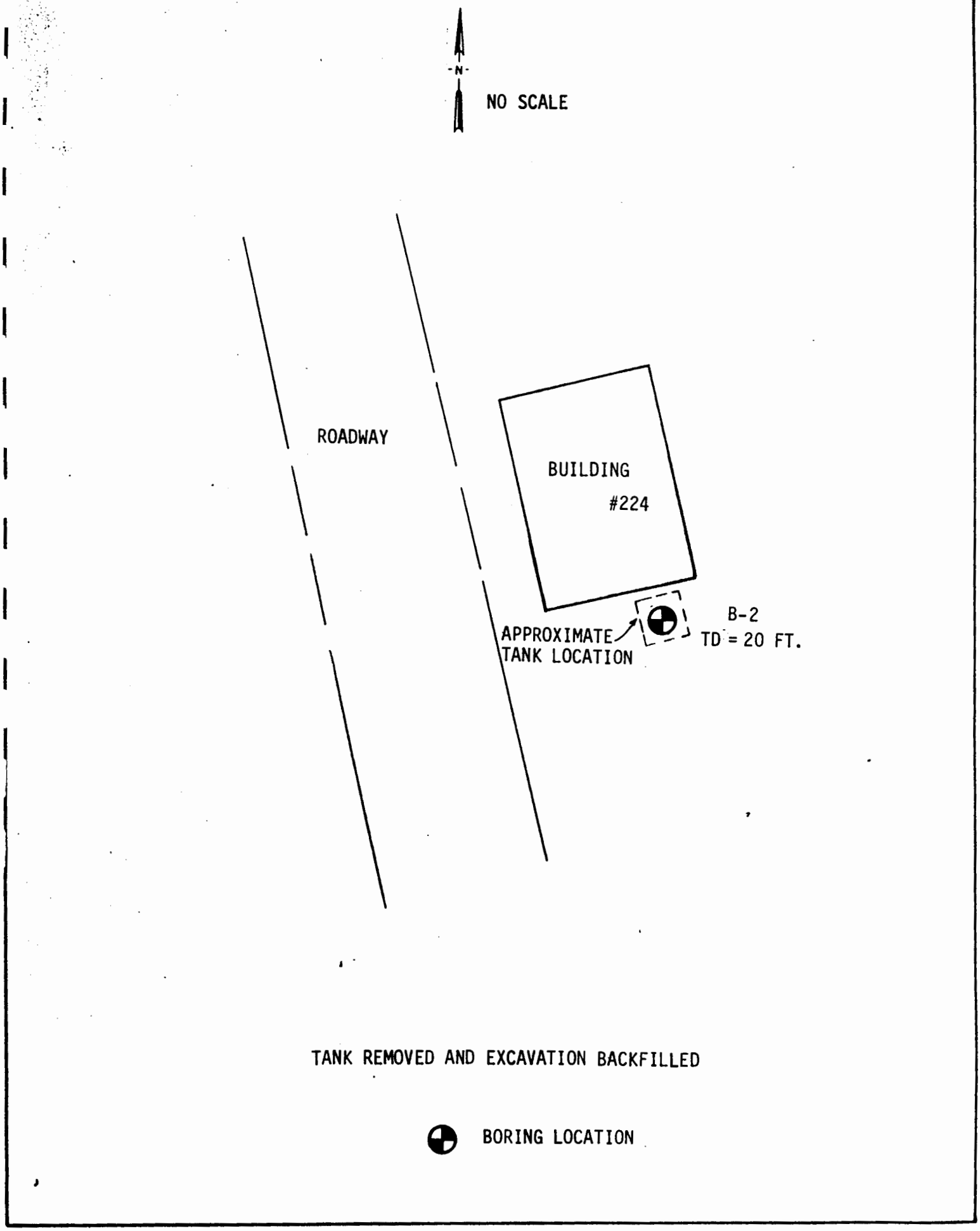
Plate No: 1

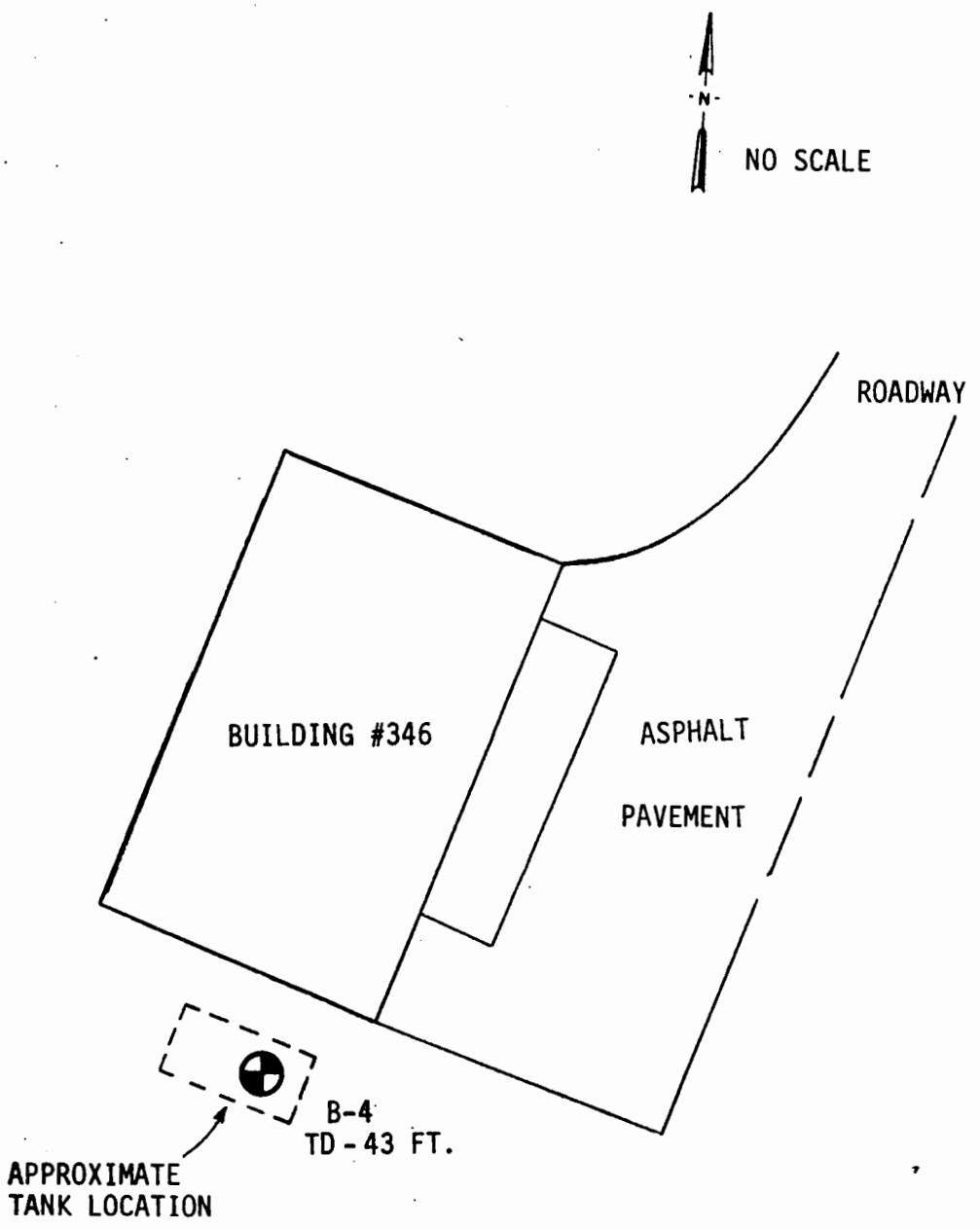

N
NO SCALE
CHAIN LINK FENCE
TOE OF NATURAL SLOPE
CONCRETE BERM
SLOPE ASCENDS WESTERLY
APPROXIMATE TANK LOCATION
B-1
TD = 32 FT.
SW-1
BUILDING #4
OVERHEAD POWER LINES
OVERHEAD TRANSFORMER
TANK ABANDONED IN PLACE
- BORING LOCATION (VERTICAL)
SW-1- SAMPLING WELL LOCATION



TANK ABANDONED IN PLACE

BORING LOCATION (VERTICAL)


-N-
NO SCALE
ROADWAY
BUILDING
#224
APPROXIMATE
TANK LOCATION
B-2
TD = 20 FT.
TANK REMOVED AND EXCAVATION BACKFILLED
BORING LOCATION



TANK REMOVED AND EXCAVATION BACKFILLED

BORING LOCATION

APPENDIX A

APPENDIX A

REFERENCES

1. Los Angeles County Flood Control District, 1982, Ground Water Contours Map, Fall, 1982.

2. California Health and Safety Code, 1980, Title 22 of the California Administrative Code, State of California Department of Health Services, Sanitary Engineering Section.

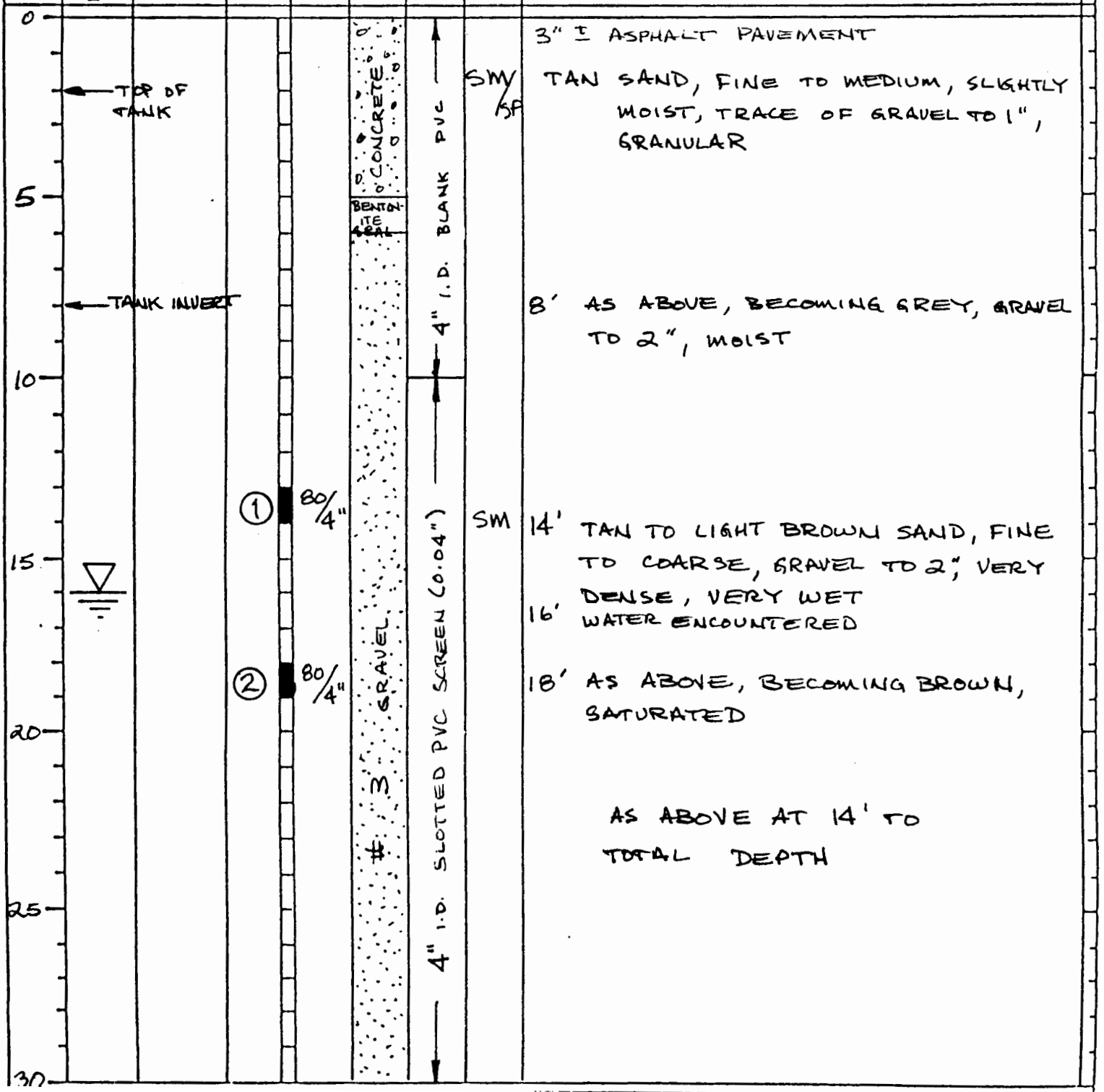
3. Jahns, R. H. and Muehlberger, W. R., 1954, Geology of the Soledad Basin, Los Angeles County, California, California Division of Mines and Geology, Bulletin 170, Map Sheet No. 6.

APPENDIX B

GEOTECHNICAL BORING LOG

Date 10/2/85 Drill Hole No. B-1, TANK #4 Sheet 1 of 2
SW-1
Project BERMITE Job No. 785 1441-01
Drilling Co. DATUM/CAL-TEST Type of Rig HOLLOW STEM AUGER
Hole Diameter 8" Drive Weight 140 lbs Drop 12 in.
Elevation Top of Hole Ref. or Datum

Logged by DER
Sampled by DER



GEOTECHNICAL BORING LOG

Date 10/2/85 Drill Hole No. B-1, TANK #4 Sheet 2 of 2

Project BERMITE Job No. 7851441-01

Drilling Co. DATUM/CAL-TEST Type of Rig HOLLOW STEM AUGER

Hole Diameter 8" Drive Weight 140 lbs. Drop 12 in.

Elevation Top of Hole Ref. or Datum

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Annular Space Backfill		Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION Logged by DER Sampled by DER
30					#3 GRVL.			BROWN SAND, FINE TO COARSE, GRAVEL TO 2", SATURATED
35								TOTAL DEPTH = 32 FEET GROUNDWATER = 16 FEET (2) INDICATES UNDISTURBED SOIL SAMPLE SLIGHT CAVING FROM 15 TO 16 FEET NOTE: DEPTH TO WATER = 13' 3½" ON 10/4/85 NO CHEMICAL ODORS DETECTED

GEOTECHNICAL BORING LOG

Date 10/2/85 Drill Hole No. B-2, TANK 224 Sheet 1 of 1

Project BERMITE Job No. 7851441-01

Drilling Co. DATUM/CAL-TEST Type of Rig HOLLOW STEM AUGER

Hole Diameter 8" Drive Weight 140 lbs. Drop 12 in.

Elevation Top of Hole Ref. or Datum

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION Logged by DER Sampled by DER
0							SP	ALLUVIUM - LIGHT BROWN GRAVELLY, SILTY SAND, FINE TO COARSE, SLIGHTLY MOIST, LOOSE, GRAVEL TO 3".
5								5' AS ABOVE, VERY GRAVELLY
								8' OBSTRUCTION - BOULDER BROKEN THROUGH
10			③	41			GM	10' BROWN GRAVELLY SAND, MEDIUM TO COARSE, SLIGHTLY MOIST, LOOSE, CAVING
15			X	58				15' NO SAMPLE RECOVERY, CAVING
20								20' REFUSAL - BOULDERS
								TOTAL DEPTH @ REFUSAL = 20 FT. NO GROUNDWATER HEAVY CAVING 8' TO 20' NO CHEMICAL ODORS DETECTED ③ DENOTES UNDISTURBED SOIL SAMPLE BORING BACKFILLED WITH MIXTURE OF BENTONITE AND NATIVE SOIL
25								

GEOTECHNICAL BORING LOG

Date 10/3/85 Drill Hole No. B-3, TANK 12 Sheet 1 of 2

Project BERMITE Job No. 7851441-01

Drilling Co. DATUM/CAL-TEST Type of Rig HOLLOW STEM AUGER

Hole Diameter 8" Drive Weight 140 lbs. Drop 12 in.

Elevation Top of Hole Ref. or Datum

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
								Logged by DER Sampled by DER
0							SC	8" CONCRETE SLAB ON NATIVE SOIL DARK BROWN CLAYEY SAND, FINE TO MEDIUM, VERY MOIST, SLIGHTLY PLASTIC
5							SM	7' LENS OF BROWN - LT. BROWN SILTY SAND FINE TO MEDIUM, MOIST
							SC	7.5' DARK BROWN TO GREY BROWN CLAYEY SAND, FINE TO MEDIUM, VERY MOIST
10			⑤	33			ML	10' DARK BROWN SILTY SAND/SANDY SILT FINE TO MEDIUM, VERY MOIST, PLASTIC, ROUNDED GRAVEL TO 1½"
15			⑥	34				
							CL	18' GREEN-BLACK SANDY CLAY, FINE TO MEDIUM, PLASTIC, VERY MOIST
20								20' AS ABOVE, BECOMING SLIGHTLY GRANULAR
25			⑦	35				
30								

GEOTECHNICAL BORING LOG

Date 10/3/85 Drill Hole No. B-3, TANK 12 Sheet 2 of 2

Project BERMITE Job No. 7851441-01

Drilling Co. DATUM / CAL-TEST Type of Rig HOLLOW STEM AUGER

Hole Diameter 8" Drive Weight 140 lbs Drop 12 in.

Elevation Top of Hole Ref. or Datum

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION Logged by DER Sampled by DER
30								30' DARK GREY SAND, FINE TO COARSE, GRAVEL TO 2", MOIST, VERY DENSE
35			(8)	80/4"				35' AS ABOVE TO TOTAL DEPTH
40								
45			(9)	80/11"				TOTAL DEPTH = 45 FEET -NO GROUNDWATER -NO CHEMICAL ODORS DETECTED -BORING BACKFILLED WITH MIXTURE OF BENTONITE AND NATIVE SOIL CUTTINGS (9) DENOTES UNDISTURBED SOIL SAMPLE

R.V.

GEOTECHNICAL BORING LOG

Date 10/3/85 Drill Hole No. B-4, TANK 346 Sheet 1 of 2

Project BERMITE Job No. 7851441-01

Drilling Co. DATUM / CAL-TEST Type of Rig HOLLOW STEM AUGER

Hole Diameter 8" Drive Weight 140 lbs Drop 12 in.

Elevation Top of Hole Ref. or Datum

Logged by DER

Sampled by DER

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION
0							SC	RED-BROWN SILTY SAND, FINE TO COARSE, GRANULAR, MOIST, TRACE OF CLAY GRAVEL TO 2"
5							SM/SC	7' AS ABOVE, FEWER FINES, NO CLAY
10							SP	12' GRAVELLY SAND, MEDIUM TO COARSE, RED-BROWN, MOIST, GRAVEL TO 3".
15			(10)	62			SC	15' RED-BROWN CLAYEY SILTY SAND, FINE TO COARSE
20			(11)	65				19' AS ABOVE, BECOMING COARSER GRAINED AND GRANULAR.
25							SM	25' RED-BROWN GRAVELLY SILTY SAND, FINE TO COARSE, GRAVEL TO 3"
30								

GEOTECHNICAL BORING LOG

Date 10/3/85 Drill Hole No. B-4, TANK 346 Sheet 2 of 2

Project BERMITE Job No. 7851441-01

Drilling Co. DATUM/CAL-TEST Type of Rig HOLLOW STEM AUGER

Hole Diameter 8" Drive Weight 140 lbs Drop 12 in.

Elevation Top of Hole Ref. or Datum

Depth Feet	Graphic Log	Attitudes	Tube Sample No.	Blows Per Foot	Dry Density pcf	Moisture Content, %	Soil Class. (U.S.C.S.)	GEOTECHNICAL DESCRIPTION Logged by DER Sampled by DER
30			(12)	80			SM	RED-BROWN GRAVELLY SILTY SAND, FINE TO COARSE, MOIST
								32' BROWN SILTY SAND, FINE TO COARSE, GRANULAR, SLIGHTLY MOIST
35								
40			(13)	80				40' AS ABOVE TO TOTAL DEPTH
45								TOTAL DEPTH = 43 FEET NO GROUNDWATER ENCOUNTERED NO CHEMICAL ODORS DETECTED (13) DENOTES UNDISTURBED SOIL SAMPLE BORING BACKFILLED WITH MIXTURE OF BENTONITE AND NATIVE SOIL.

APPENDIX C

BROWN AND CALDWELL

ANALYTICAL LABORATORIES

LOG NO: P85-10-075

Received: 04 OCT 85
Reported: 28 OCT 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOIL SAMPLES	DATE SAMPLED
10-075-1	B-1 13'	03 OCT 85
10-075-2	B-2 10'	03 OCT 85

PARAMETER	10-075-1	10-075-2
Oil and Grease, mg/kg	<10	<10
Hydrocarbons by IR, mg/kg	<10	<10

LOG NO: P85-10-075

Received: 04 OCT 85
Reported: 28 OCT 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOIL SAMPLES	DATE SAMPLED
10-075-3	B-3 10'	03 OCT 85
10-075-4	B-3 25'	03 OCT 85

PARAMETER	10-075-3	10-075-4
Fuel Aromatics/Hydrocarbons		
Benzene, mg/kg	<1	<1
Total Fuel Hydrocarbons, mg/kg	<5	<5
Toluene, mg/kg	<1	<1
Total Xylene Isomers, mg/kg	<1	<1

LOG NO: P85-10-075

Received: 04 OCT 85
Reported: 28 OCT 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOIL SAMPLES	DATE SAMPLED
10-075-5	B-4 13'	03 OCT 85

PARAMETER	10-075-5
Heptane, mg/kg	<5

LOG NO: P85-10-075

Received: 04 OCT 85
Reported: 28 OCT 85

Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , SOIL SAMPLES	DATE SAMPLED
10-075-11	B-4 30'	03 OCT 85

PARAMETER	10-075-11
Heptane, mg/kg	<5

LOG NO: P85-10-075

Received: 04 OCT 85
Reported: 28 OCT 85

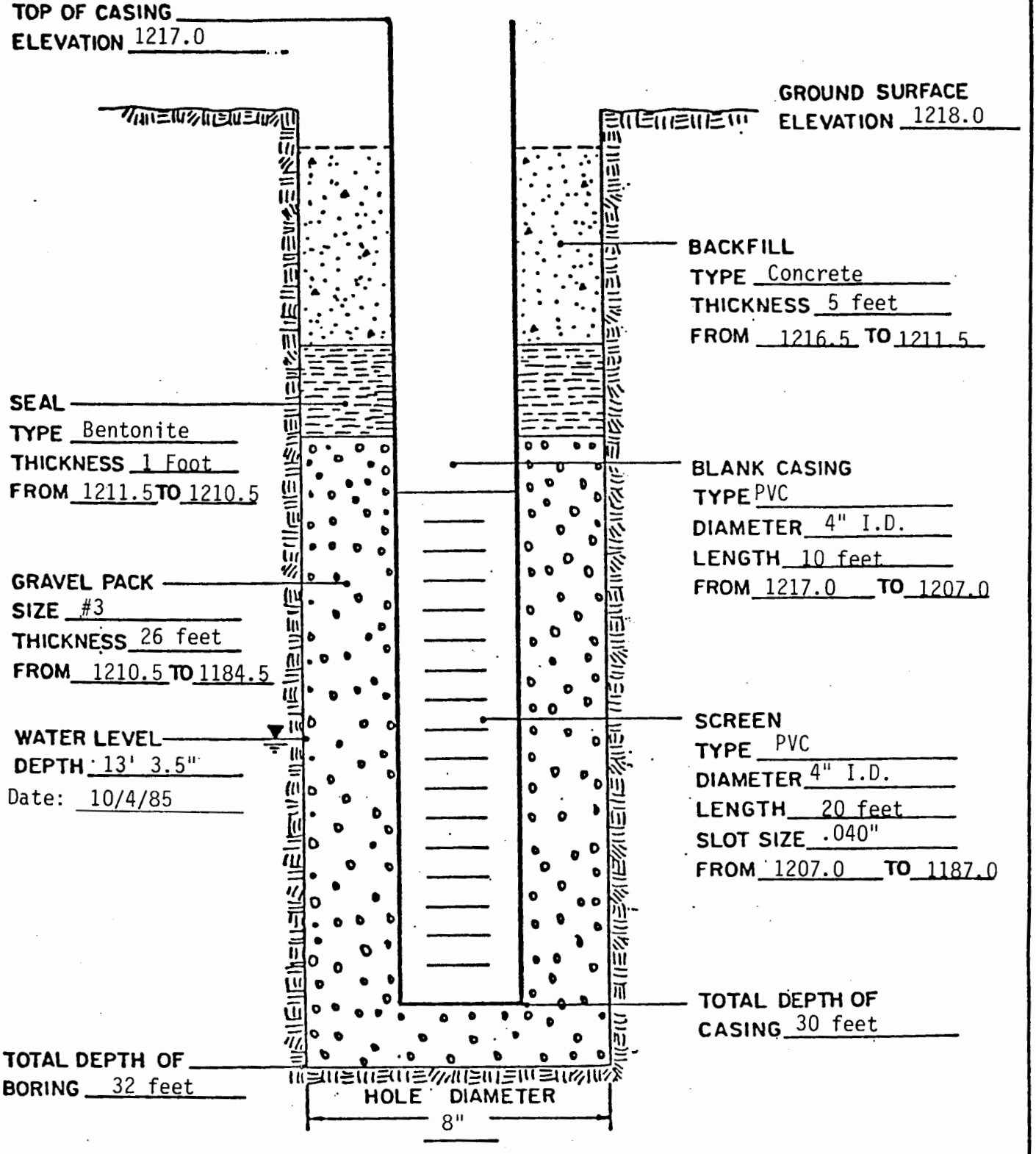
Dale Radford
Leighton & Associates
25530 Avenue Stanford
Valencia, CA 91355

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION , AQUEOUS SAMPLES	DATE SAMPLED
10-075-12	SW-1 B-1	04 OCT 85

PARAMETER	10-075-12
Oil and Grease, mg/L	0.5
Hydrocarbons by IR, mg/L	<0.5

APPENDIX D



L&A

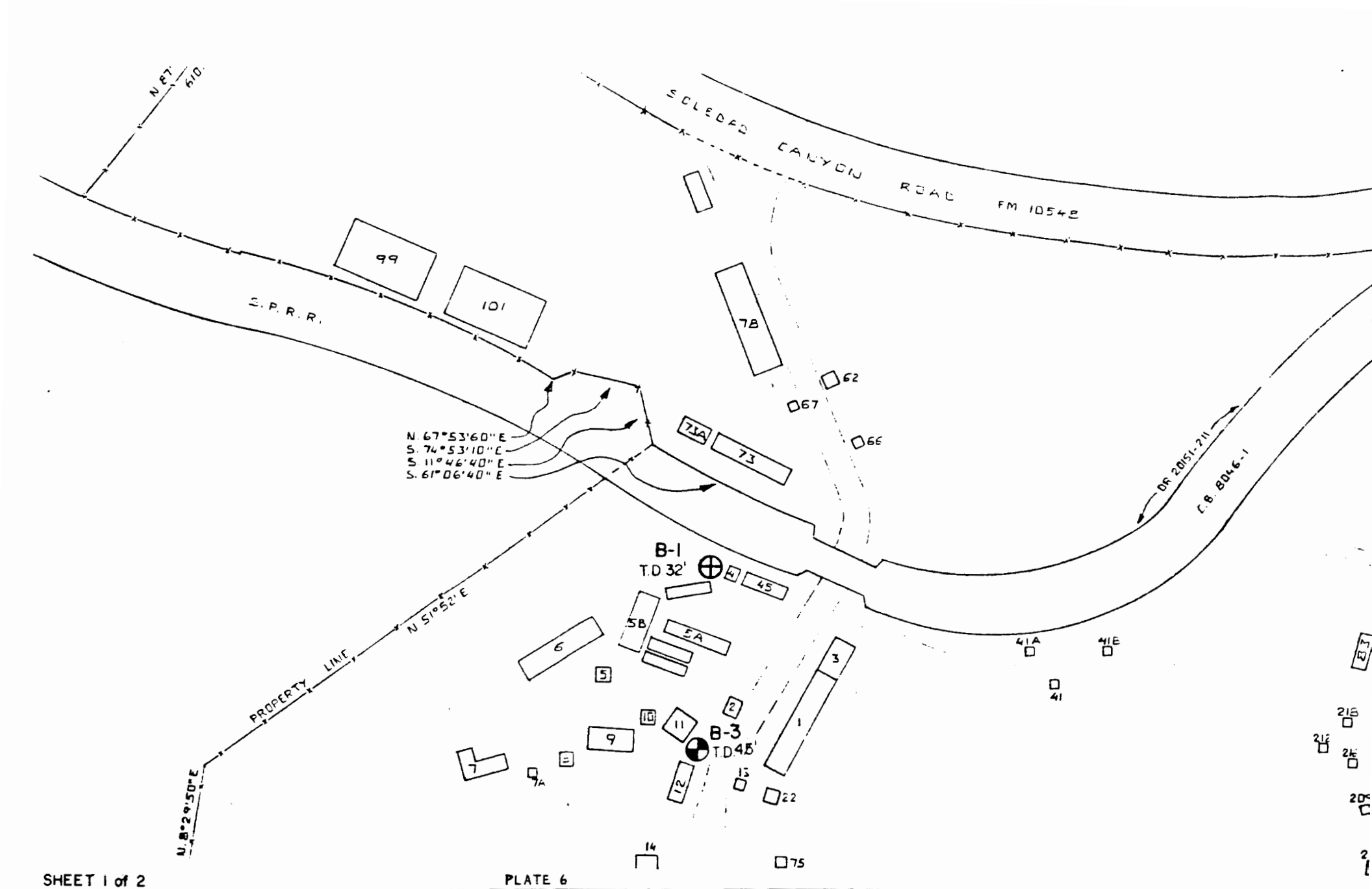
MONITORING WELL DETAIL

PROJECT: Bermite WELL NUMBER SW-1

Project No: 7851441-01

Leighton & Associates

Plate No:



SHEET 1 of 2

PLATE 6

BORING LOCATION MAP

BERMITE

22116 Soledad Canyon Road

Saugus County of Los Angeles

Proj. 7851441-01 | Scale 1"=135'± | Date 12/6/85

Engr. | Project D. | Dr. | Draf. njs

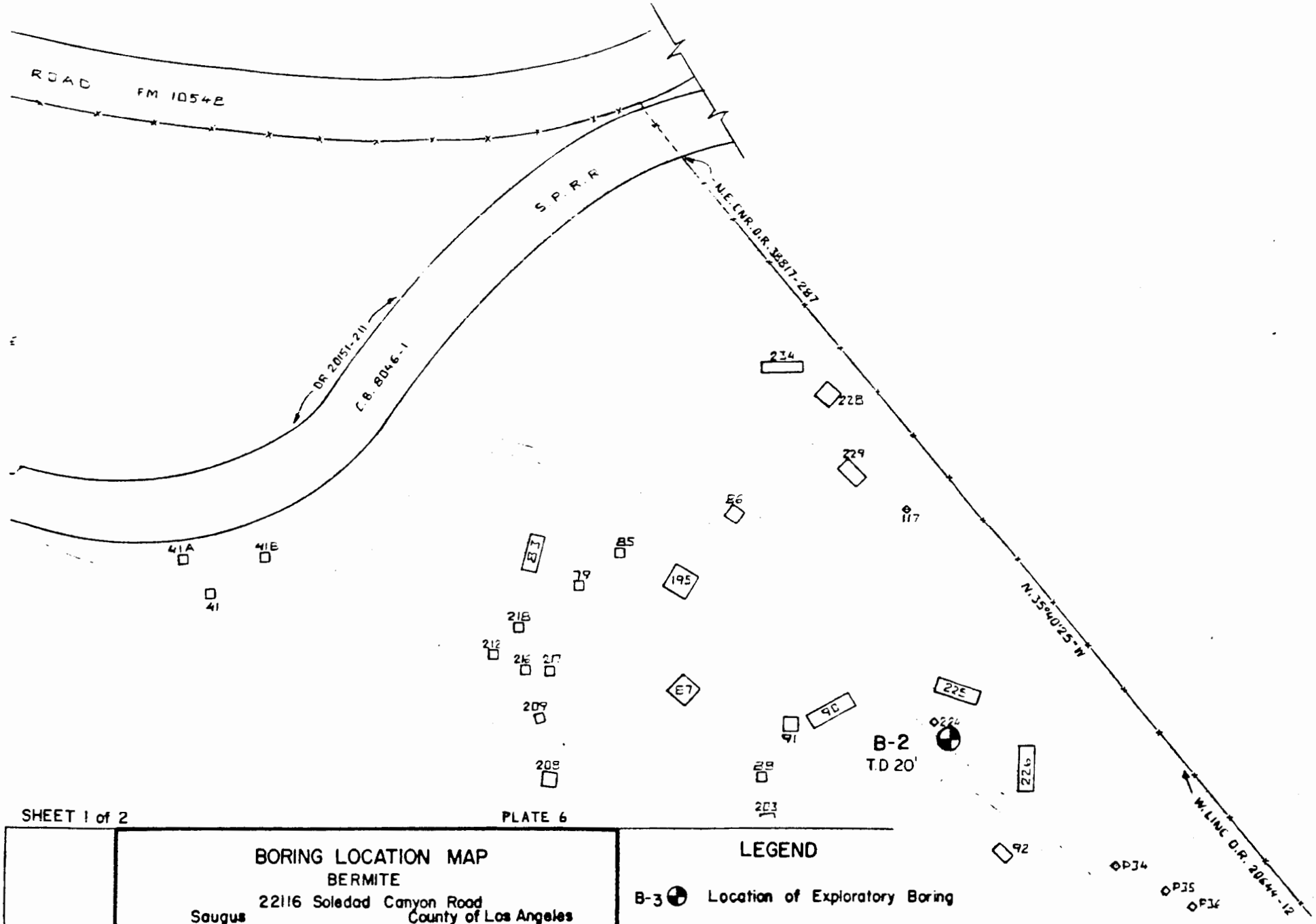
LEIGHTON and ASSOCIATES, INC.

SH.

LEGEND

B-3 ◒ Location of Exploratory Boring

B-1 ⊕ Location of Boring and Groundwater Sampling Well



SHEET 1 of 2

PLATE 6

BORING LOCATION MAP

BERMITE

22116 Soledad Canyon Road

Saugus County of Los Angeles

Proj. 7851441-01	Scale 1"=135'±	Date 12/6/85
Engineer/Geologist DFD/TM	Drafted By mjs	

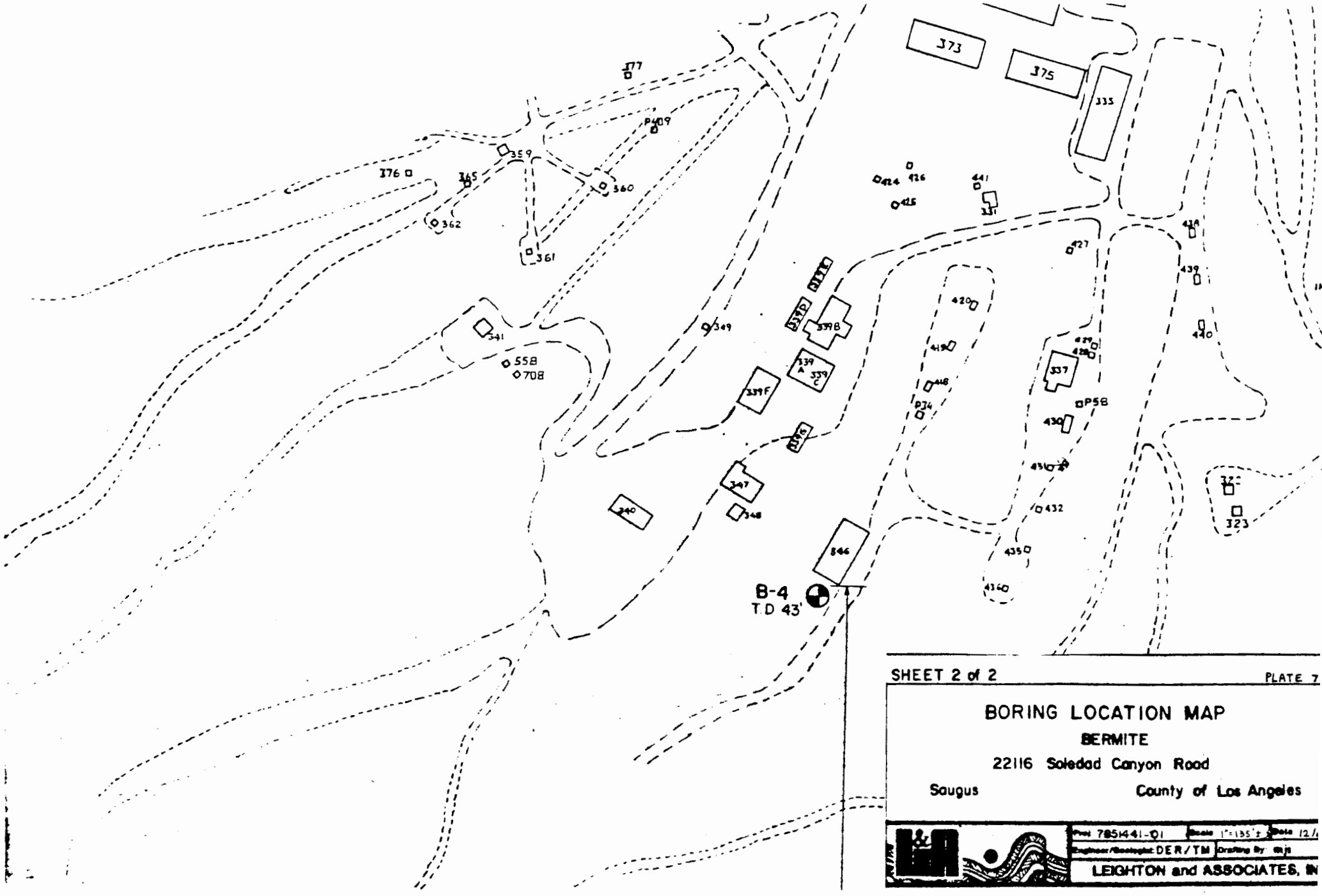
LEIGHTON and ASSOCIATES, INC.

LEGEND

B-3 ⊕ Location of Exploratory Boring

B-1 ⊕ Location of Boring and Groundwater Sampling Well

SH. 2



SHEET 2 of 2 PLATE 7

BORING LOCATION MAP

BERMITE

22116 Soledad Canyon Road

Saugus County of Los Angeles

Proj. 7851441-01 Scale 1"=135'± Date 12/

Engineer/Geologist DER/TM Drafting By mjs

LEIGHTON and ASSOCIATES, IN

LEGEND

B-4 Location of Exploratory Boring

APPENDIX C

UNDERGROUND STORAGE TANK CLOSURE DOCUMENTATION FOR TANK NEAR FORMER BUILDING NO. 308

COUNTY OF LOS ANGELES
DEPARTMENT OF PUBLIC WORKS
1540 ALCAZAR STREET
LOS ANGELES, CALIFORNIA 90033
Telephone: (213) 226-6111

THOMAS A. TIDEMANSON, Director
WYNN SMITH, Chief Deputy Director
CECIL BUGH, Assistant Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 4088
LOS ANGELES, CALIFORNIA 90051

Part Report w/ appendix

IN REPLY PLEASE REFER TO FILE I-975-70

March 25, 1987

Bldg. 308 tank removal

Bermite Division
Whittaker Corp.
22116 W. Soledad Canyon Road
Saugus, CA 91350

Gentlemen:

HAZARDOUS MATERIALS UNDERGROUND STORAGE
CLOSURE PERMIT NO. 1564B
FACILITY AT: 22116 W. SOLEDAD CYN. ROAD

This office has reviewed the soil/groundwater assessment report submitted on March 4, 1987 as required as part of the subject closure procedure. Based on the information submitted, the following action is required:

[ ] The closure is final and no further action is required.

[X] The soils removed during the tank excavation are unrestricted and may be used as backfill material. The closure is final and no further action is required.

[ ] The soils are not suitable as fill material and must be manifested and transported to a hazardous waste disposal facility as required by California Health and Safety Code, Division 20, Chapter 6.2, unless evidence is presented indicating that disposal is proper at a less restricted facility. Copies of all completed manifests shall be submitted to this office indicating legal disposal.

[ ] The permanent closure of the tank(s) in place shall comply with requirements set by the local Fire Department. Verification must be submitted to this office indicating proper closure and completion of all work.

If you have any questions concerning this matter, please contact Mr. John Huff at (213) 226-4018.

Very truly yours,

T. A. TIDEMANSON
Director of Public Works

By John Huff
Waste Management Division

cc: Wenck Associates, Inc.

CL204 8/86

Wenck Associates, Inc.

March 3, 1987

Consulting Engineers
(612) 475-0858

Mr. M. Michael Mohajer
Supervising Civil Engineer III
Engineering Services Division
County of Los Angeles
Department of Public Works
2250 Alcazar Street
Los Angeles, CA 90033

Re: Underground Storage Closure Permit 1564B
Bermite Division, Whittaker Corporation
22116 West Soledad Canyon Road
Saugus, California 91350

Dear Mr. Mohajer:

The underground tank located near buildling 308 was removed in accordance with the permit application submitted to your office on June 6, 1987 and approved by your letter dated June 30, 1986. Figures 1 and 2 are enclosed showing the location of the building and the concrete tank together with the dimensions of the tank and the sampling points. Two sampling locations were sampled. Each sampling location was sampled at two depths. The depths of the samples were 6-1/2 feet and 11-1/2 feet. The 6-1/2 foot depth was from immediately below the tank and the second sample was from five feet below the bottom of the tank.

Samples were obtained on February 4, 1987. The sample depths were reached by using a backhoe. Soil samples were taken from the excavated area using a spatula to remove soil to expose undisturbed areas. An undisturbed sample was taken with a spatula and placed in the pre-cleaned 1/2 liter sampling containers. The sample containers were sealed and placed on ice in a cooler. Samples were transported to Aton Laboratories on the same day. A chain-of-custody sheet was completed and is enclosed as Enclosure 1. As shown on the chain-of-custody record, Mr. George Ulfers, Laboratory Director of the laboratory, received these samples.

Enclosure 2 are the analytical results signed by the director of the laboratory indicating that no ammonium perchlorate or strontium nitrate were detected in either of the samples. In addition, no contamination was observed or detected at the sample points.

No groundwater was encountered during the excavation. It is estimated that the groundwater is at least 200 feet below the surface at the site of this former facility.

832 Twelve Oaks Center
15500 Wayzata Blvd
Wayzata, MN 55391

Wenck Associates, Inc.

Consulting Engineers
(612) 475-0858

After receipt of the laboratory results indicating no contamination, the concrete tank was broken up and transported to a sanitary landfill.

Based on the findings of the field inspection, the laboratory results and this report, there are no remedial actions recommended.

This report is submitted in fulfillment of the requirements of the closure permit no. 1564B. If there are any questions on this matter please feel free to contact me.

Respectfully submitted,

WENCK ASSOCIATES, INC.

Norman C. Wenck, P.E.

NCW/cmk
Enclosures

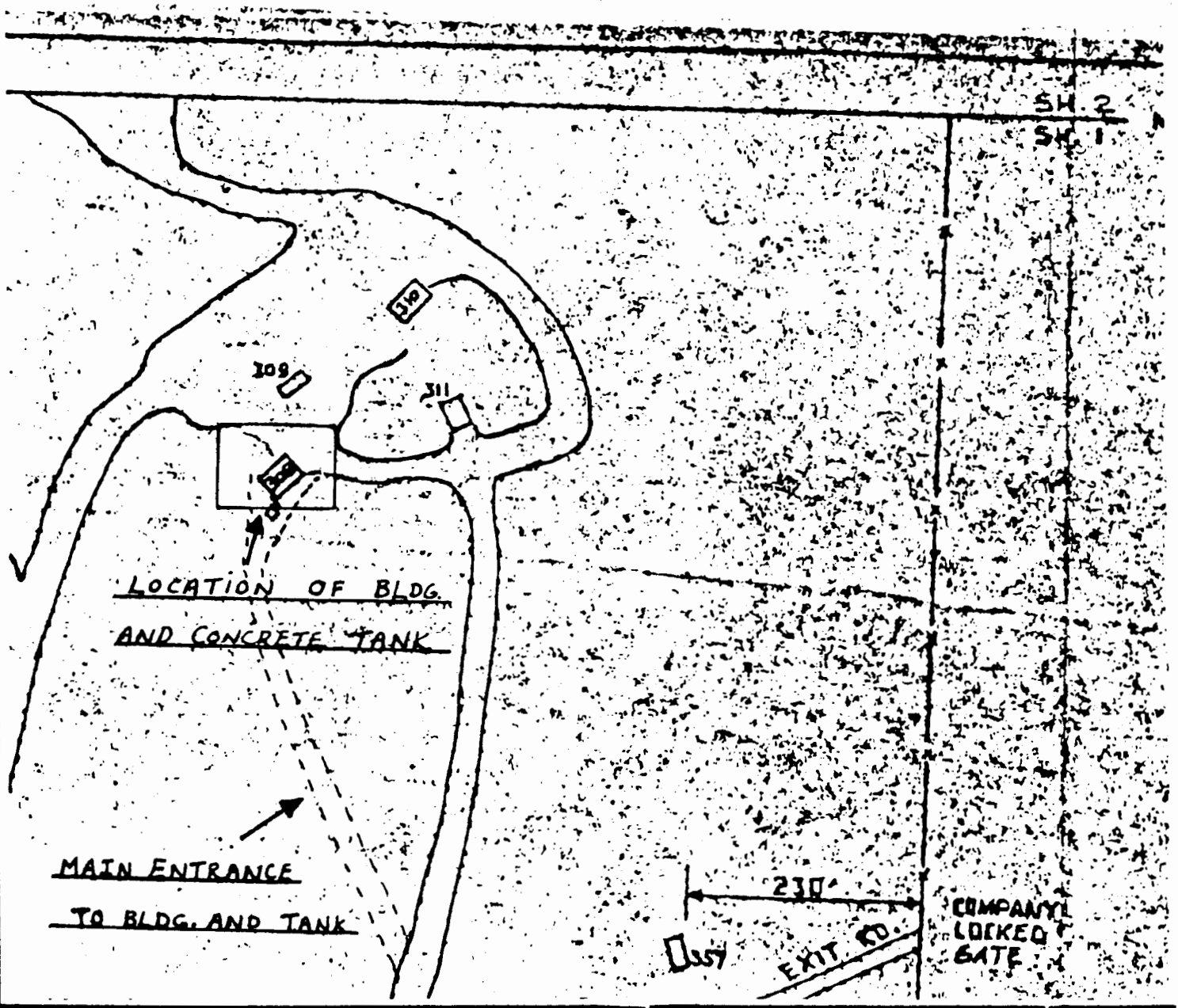
832 Twelve Oaks Center
15500 Wayzata Blvd
Wayzata, MN 55391

SCALE 3/8" = 50 FEET

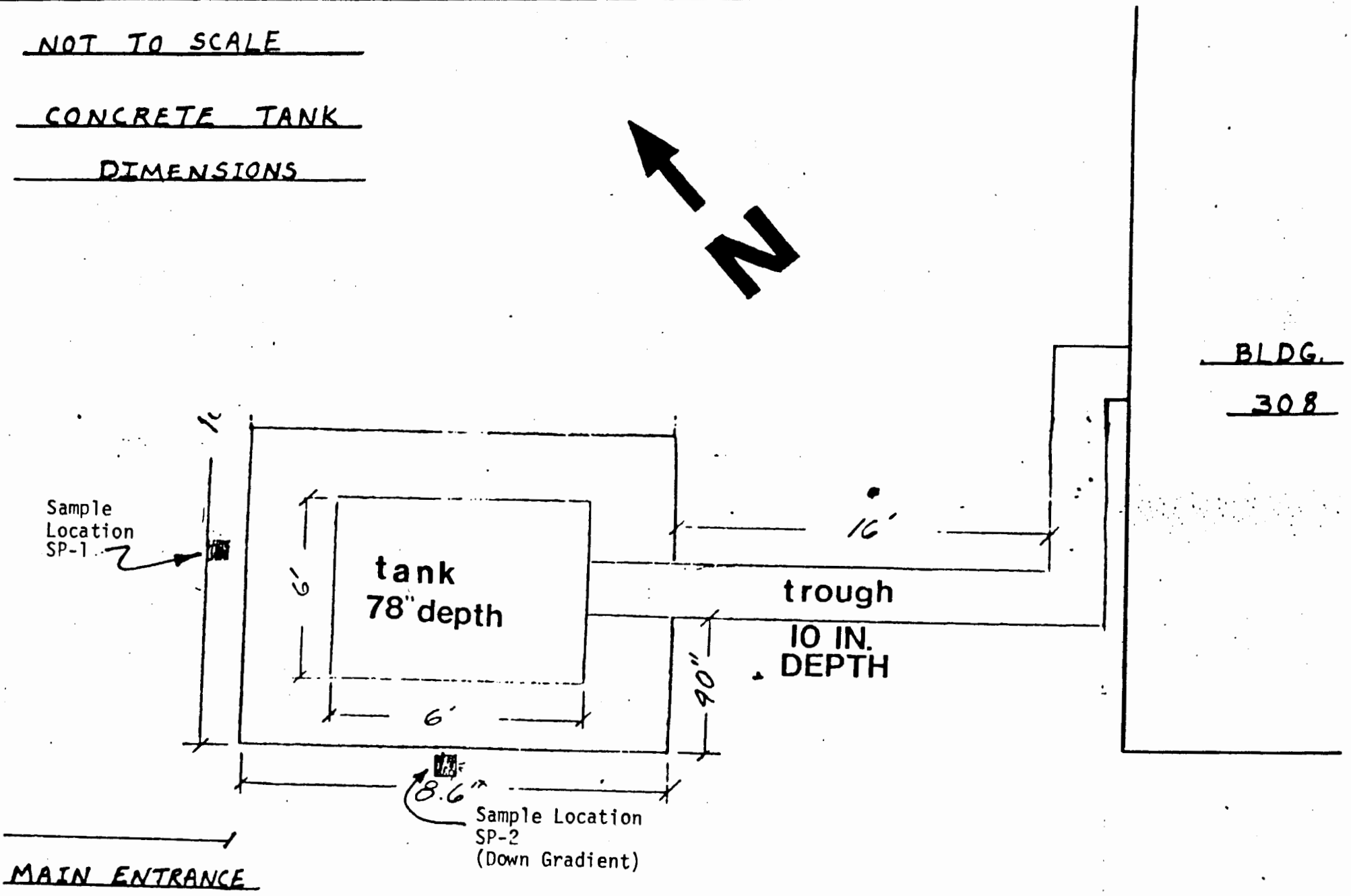
N

PLOT PLAN

CONCRETE TANK LOCATION



BERMITE DIVISION WHITTAKER CORPORATION	Consulting Engineers	FIGURE
Plot Plan of Building 308	Twelve Oaks Center 15500 Wayzata Blvd.	1



PERMITE DIVISION WHITTAKER CORPORATION

Sample Location Map of Building 308 Tank

Wenck Associates, Inc.

Consulting Engineers

Twelve Oaks Center
15500 Wayzata Blvd.
Wayzata, MN 55391

FIGURE

2

N:

Wenck Associates, Inc.
914 Twelve Oaks Center
15500 Wayzata Blvd.
Wayzata, MN 55391

CHAIN OF CUSTODY RECORD

FIELD COORDINATOR: TIM BRICKER

PROJ. NO.

PROJECT NAME: BERMITE DIV. OF WHITTAKER CORP.
22116 W. SOLEDAD CANYON RD.
SAUGUS CA. 91350

SAMPLERS (Signature): Tim Bricker

STA NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	REMARKS
	2/4/87				308 SUMP AREA	4	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Tim Bricker	2/4/87	10:00 AM	George F. Uller				
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)

Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Remarks
			George F. Uller	2/6/87	2:45 PM	

ATON
LABORATORIES

Customer: Bermite Div. of Whittaker

S/O: 8708

Sample Date: 2/4/87

Attention: Mr. Tim Bricker

Subject: Analysis of Soil for Contamination by Ammonium Perchlorate or Strontium Nitrate.

Procedure:

1. Soil Samples were obtained by Tim Bricker of Bermite location and Sample I.D. are noted below.of # 308 Sump.
2. Samples were delivered in sealed containers to Aton Laboratories by Tim Bricker.
3. Samples were analyzed per Standard Methods , 15'th Edition and EPA _METHODS FOR CHEMICAL ANALYSIS OF WATER AND WASTES.

Results:

Sample I.D. and Loacation	Concentration Ammonium Perchlorate	Concentration Strontium Nitrat
Sp1 - 6½ feet	N/D	N/D
Sp2 - 6½ feet	N/D	N/D
Sp1A - 11½ feet	N/D	N/D
Sp2A - 11½ feet	N/D	N/D

Comments: N/D = less than 1.0 mg/Kg.

George F. Allen
Laboratory Director

9345 MELVIN AVE. #7 • NORTHRIDGE, CALIFORNIA 91324 • (818) 993-5775

APPENDIX D

UNDERGROUND GASOLINE STORAGE TANK CLOSURE DOCUMENTATION

COUNTY OF LOS ANGELES

DEPARTMENT OF PUBLIC WORKS

1540 ALCAZAR STREET
LOS ANGELES, CALIFORNIA 90033
Telephone: (213) 226-8111

THOMAS A. TIDEMANSON, Director
WYNN SMITH, Chief Deputy Director
CECIL BUGH, Assistant Director

ADDRESS ALL CORRESPONDENCE TO:
P.O. BOX 4088
LOS ANGELES, CALIFORNIA 90051

RECEIVED BY
WENCK ASSOCIATES INC.

SEP 21 1987

September 15, 1987

IN REPLY PLEASE
REFER TO FILE: 975-Z

Wenck Associates
832 Twelve Oaks Center
15500 Wayzata Boulevard
Wayzata, MN 55391

Two gasoline tanks

HAZARDOUS MATERIALS UNDERGROUND STORAGE
CLOSURE PERMIT NO. 2848B
FACILITY AT: 22116 West Soledad Canyon

This office has reviewed the soil/groundwater assessment report submitted on September 1, 1987 as required as part of the subject closure procedure. Based on the information submitted, the following action is required:

[ ] The closure is final and no further action is required.

[X] The soils removed during the tank excavation are unrestricted and may be used as backfill material. The closure is final and no further action is required.

[ ] The soils are not suitable as fill material and must be manifested and transported to a hazardous waste disposal facility as required by California Health and Safety Code, Division 20, Chapter 6.2, unless evidence is presented indicating that disposal is proper at a less restricted facility. Copies of all completed manifests shall be submitted to this office indicating legal disposal.

[ ] The permanent closure of the tank(s) in place shall comply with requirements set by the local Fire Department. Verification must be submitted to this office indicating proper closure and completion of all work.

If you have any questions concerning this matter, please contact Ms. Kelsey Schwartz at (213) 226-4437.

Very truly yours,

T. A. TIDEMANSON
Director of Public Works

By _____
Waste Management Division

cc: WENCK ASSOCIATES

CL204 8/86

Wenck Associates, Inc.

Sent 8/24/87

August 19, 1987

Consulting Engineers
(612) 475-0858

Ms. Kelsey Schwartz
Waste Management Division
County of Los Angeles
Department of Public Works
1540 Alcazar Street
Los Angeles, CA 90033

Re: Underground Storage Closure Permit No. 2848B
Bermite Division, Whittaker Corporation
22116 West Soledad Canyon Road
Saugus, California 91350

Dear Ms. Schwartz:

The two underground storage tanks were removed in accordance with the permit application submitted to your office on February 20, 1987 and approved by your letter of June 16, 1987. The two tanks were located in the area indicated on the enclosed Figure 1. Each tank measured approximately 8.75 feet long by 6.5 feet in diameter. The bottom of both tanks was approximately 12 feet from the surface. Two soil samples from below each tank were taken in the areas indicated on Figure 1.

The tanks were removed and the samples taken on August 6 and 7, 1987. The excavation of the tanks was accomplished with the use of a backhoe. The soil samples were taken from undisturbed soil after the tanks were removed. A spatula was used to remove the soil and each sample was placed in a pre-cleaned 250 ml sampling container.

The sampling containers were then sealed and labeled and placed on ice in a cooler. The samples were then transported to FGL Environmental Laboratories on August 7. A chain of custody sheet was completed and is enclosed along with the analytical results of the four samples (Enclosure 1).

The analytical results indicate that the soils have no detectable concentrations of petroleum hydrocarbons or of benzene, toluene or xylenes. The samples were analyzed for total petroleum hydrocarbons by EPA method 8015 and were analyzed for benzene, toluene and xylenes by EPA method 8020. In addition, no contamination was observed or detected during the excavation of the tanks. The tanks showed no signs of structural failure.

No groundwater was encountered in the excavations. It is believed that the groundwater table is approximately 20 feet from the

832 Twelve Oaks Center
15500 Wayzata Blvd.
Wayzata, MN 55391

Wenck Associates, Inc.

Consulting Engineers
(612) 475-0858

surface in the area of the tank excavations or about eight feet below the bottom of the former tanks.

The tanks were cleaned of residual fuels and sludges by Martin Pumping, Inc. The fuel and sludge waste was properly disposed of by Martin Pumping and a copy of the waste manifest is included herein (Enclosure 2). The cleaned tanks were then removed from the facility by Martin Pumping, Inc.

Based on the findings during the excavation, the laboratory results and this report, there are no remedial actions recommended.

This report is submitted in fulfillment of the requirements of the Closure Permit No. 2848B. If there are any questions on this matter please feel free to contact me.

Respectfully submitted,

WENCK ASSOCIATES, INC.

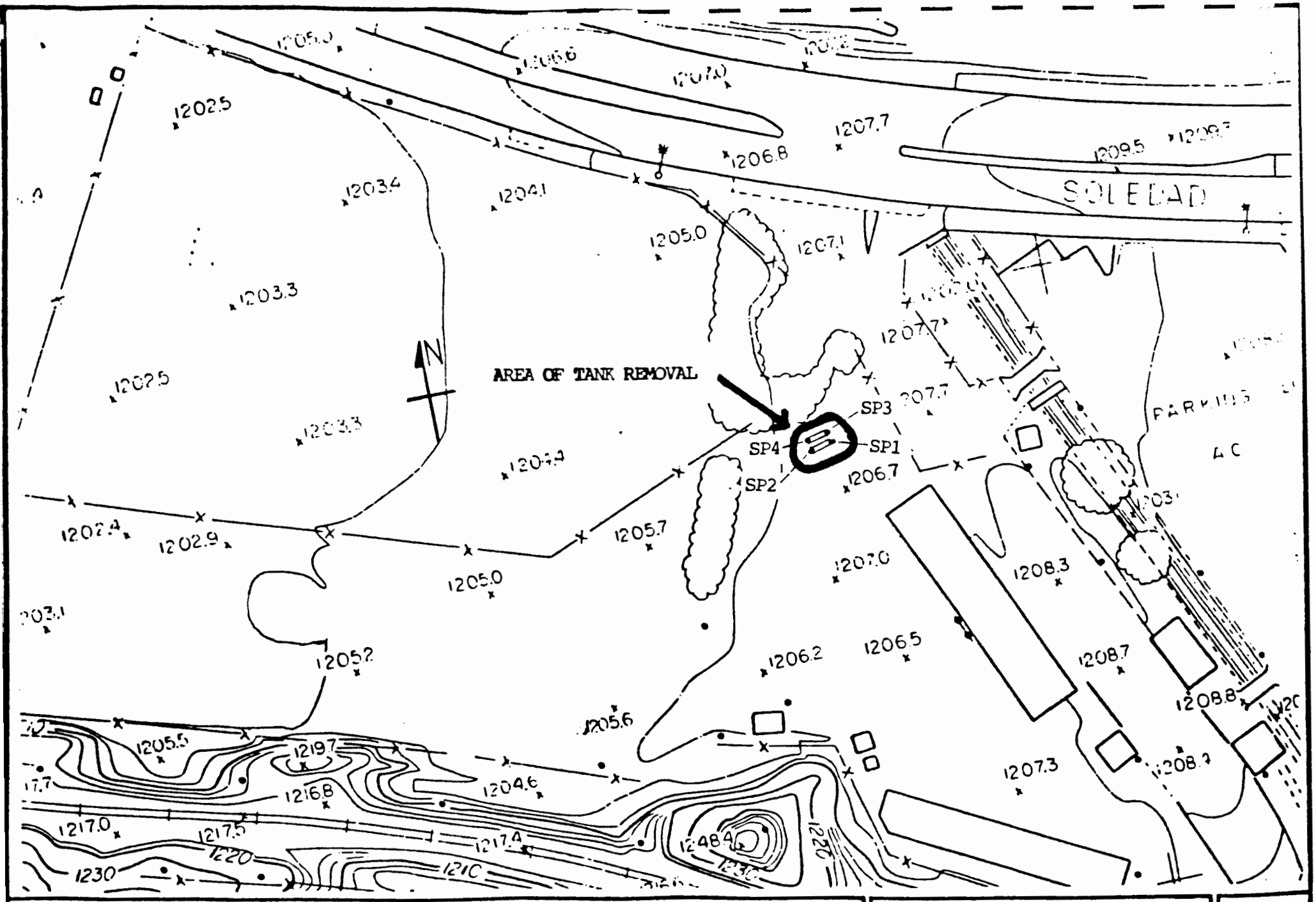
Norman C. Wenck, P.E.

REGISTERED PROFESSIONAL ENGINEER
NORMAN C. WENCK
NO. C-041317
EXP. 3-31-91
CIVIL ENGINEER
STATE OF CALIFORNIA

NCW/cmk

cc: Gordon Louttit, Whittaker Corporation

832 Twelve Oaks Center
15500 Wayzata Blvd.
Wayzata, MN 55391



BERMITE DIVISION - WHITAKER CORPORATION	Consulting Engineers	AUG 87
Underground Storage Tank Location, Sampling Point Location Scale: 1" = 100'	Wenck Associates, Inc. Twelve Oaks Center 15500 Wayzata Blvd. Wayzata, MN 55391	Fig. 1

ENCLOSURE 1

ANALYTICAL RESULTS AND CORRESPONDING
CHAIN OF CUSTODY DOCUMENTATION

FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

CLIENT: Bermite Division of Whittaker
22116 W. Soledad Cyn. Rd.
Saugus, CA 91350

DATE: August 11, 1987

RECEIVED: August 7, 1987

REPORT OF ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS (TPH)

FGL #	Description	mg/kg (ppm)
78888-1	SP1-SE	less than 10
78888-2	SP2-SW	less than 10
78888-3	SP3-NE	less than 10
78888-4	SP4-NW	less than 10

Respectfully submitted,
FGL ENVIRONMENTAL

Deborah Atraqchi

Deborah Atraqchi

John F. Quinn

John F. Quinn, Ph.D.

DA/JFQ:cem

Method of Analysis: EPA SW846 8015 (GC-FID)

FGL ENVIRONMENTAL

ANALYTICAL CHEMISTS

CLIENT: Bermite Division of Whittaker
22116 W. Soledad Cyn. Rd.
Saugus, CA 91350

DATE: August 11, 1987

RECEIVED: August 7, 1987

REPORT OF ANALYSIS FOR EPA METHOD 8020-VOLATILE AROMATICS

FGL #	Description	(ppb) Benzene	(ppb) Toluene	(ppb) Xylenes
78888-1	SP1-SE	*0.2	*10	*10
78888-2	SP2-SW	*0.2	*10	*10
78888-3	SP3-NE	*0.2	*10	*10
78888-4	SP4-NW	*0.2	*10	*10

* indicates "not present at or above the indicated value".

ppb = ug/kg

Respectfully submitted,
FGL ENVIRONMENTAL

Deborah Atraqchi
Deborah Atraqchi

John F. Quinn
John F. Quinn, Ph.D.

DA/JFQ:cem

Method of Analysis: EPA SW846 8020

BTX

70888

ATU

Wenck Associates, Inc.
914 Twelve Oaks Center
15500 Wayzata Blvd
Wayzata, MN 55391

CHAIN OF CUSTODY RECORD

BTX

FIELD COORDINATOR: NORM WENCK

PROJ. NO.

PROJECT NAME: ~~PERMIT~~ LA County Permit # 2848B

SAMPLERS (Signature): Norman Wenck

STA NO	DATE 1987	TIME	COMP	GRAB	STATION LOCATION	NUMBER OF CONTAINERS	Gasoline-8020	TPH-8015					REMARKS
SP1SE	8/6	11:50		✓	Below South Tank-East End	1@250ml	✓	✓					
SP2SW	8/6	1645		✓	Below South Tank-West End	1@250ml	✓	✓					
SP3NE	8/6			✓	Below North Tank-East End	1@250ml	✓	✓					
SP4NW	8/6			✓	Below North Tank-West End	1@250ml	✓	✓					

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
Norman Wenck	8/7/87	1100					
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received by: (Signature)
			C.I.				
Relinquished by: (Signature)	Date	Time	Received for Laboratory by: (Signature)	Date	Time	Remarks	
	8/7/87	11:55	C. Mathews	8			

DISTRIBUTION: Original Accompanies Shipment, Copy to Coordinator Field Files

ENCLOSURE 2

WASTE MANIFEST OF LIQUID AND SLUDGES
FROM TWO UNDERGROUND STORAGE TANKS

Form Approved OMB No. 2060—0039 (Expires 9-30-88)
Please print or type (Form designed for use on elite (12-pitch typewriter).

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAD064573108 Manifest Document No. 01212 17

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
WHITTAKER CORP. BERMITE DIV.
22116 W. SOLEDAD CANYON RD. SAUGUS, CA. 91350

4. Generator's Phone (805) 259-2241

A. State Manifest Document Number 87204888

B. State Generator's ID HAH3600654

5. Transporter 1 Company Name: MARTIN IND. PUMPING INC.
6. US EPA ID Number: CAD000628636

C. State Transporter's ID 807132

D. Transporter's Phone (805) 251-3737

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
DEMENNO/KERDOON
2100 N. ALAMEDA ST.
COMPTON CA 90222
10. US EPA ID Number: CAT080013352

G. State Facility's ID

H. Facility's Phone 213-537-7100

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA9189	001	TT	00100	G	State 134 EPA/Other NON RCRA
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above
GAS 3 WASTE WATER FROM WATER GASOLINE UNDER GROUND TANK CLEANING

K. Handling Codes for Wastes Listed Above
a. b. c. d.

15. Special Handling Instructions and Additional Information
PROTECTIVE GLOVES, GOGGLES

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: GLEN ABDUN-NUR — Signature — Month Day Year: 10 8 12 87

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: LARRY RAMIREZ — Signature — Month Day Year: 10 8 87

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name — Signature — Month Day Year

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

HS 8022 A (1/87)
PA 8700—22
(Rev. 9-86) Previous editions are obsolete.

White: TSDF SENDS THIS COPY TO DOHS WITHIN 30 DAYS
To: P.O. Box 3000, Sacramento, CA 95812

INSTRUCTIONS ON THE BACK

APPENDIX E

RESPONSE TO EPA INFORMATION NEEDS
SUBMITTED TO MICHAEL A. FERNANDEZ, P.E.
NOVEMBER 4, 1987

RESPONSE TO
EPA INFORMATION NEEDS
REQUESTED BY MICHAEL A. FERNANDEZ, P.E.

Prepared for
Bermite Division of
Whittaker Corporation
Saugus, California
EPA No. CAD 064 573 108

Prepared by
Wenck Associates, Inc.
832 Twelve Oaks Center
15500 Wayzata Boulevard
Wayzata, Minnesota 55391
612-475-0858

November 4, 1987

TABLE OF CONTENTS

LIST OF APPENDICES

RESPONSE: GENERAL INFORMATION

The premises on which the Bermite Powder Division of Whittaker Corporation are located have been employed in the business of the design, development, formulation, fabrication, and assembly of explosive and pyrotechnic devices since approximately 1906. Whittaker Corporation purchased the business including the premises from the Bermite Powder Company in 1967.

Since Whittaker's acquisition of the facility the significant business operations involved the production of infra-red flares, illuminating flares, JATO rocket motors, Sidewinder rocket motors, Chaparral rocket motors, spin rockets, practice bombs, detonators, destructors, gas generators, squibs, 20mm, 30mm, and 50 cal. ammunition. A chronological listing of the manufacture of the above products would be difficult to determine and would not be especially meaningful since many of the products were produced simultaneously and some of them were manufactured intermittently throughout Whittaker's tenure.

Since, as far as Whittaker knows, there is no one who can accurately detail the various products manufactured and processes employed at Bermite prior to its acquisition by Whittaker, much of the information herein for periods prior to 1967 is based on reports of former employees and assumptions based upon our knowledge of what was manufactured at the facility prior to 1967. It has been reported, for example, that in addition to the above items, aerial fireworks, photoflash bombs, and certain types of dynamite were produced at this facility. Whittaker is not, however, aware that any basic chemical reaction-type processes ever took place at this facility. Based upon everything known to us, we believe that the manufacturing processes that took place at this facility were, generally, chemical formulation and mechanical assembly of the products and devices referred to above.

The operations employed at the facility in the manufacture of explosive and pyrotechnic devices include: weighing, grinding, granulating, screening, sizing, mixing, blending, drying and curing, casting, pressing, and extruding, of various chemical compounds; the stamping, mechanical and electrical assembly of component parts; and the finishing, labeling, and packaging of the finished product. Each Bermite product would generally employ a combination of some or all the above-listed unit operations. In general, only one of the above-listed unit operations would take place at a specific location. Like most munitions facilities, Bermite's manufacturing operations were located in a number of separate smaller buildings. A product line, for example, that involved weighing, blending, drying, pressing, and mechanical assembly would typically be divided among five separate buildings, one for each unit operation. These buildings were, by design, widely separated geographically for reasons of safety. In addition, the manufacturing processes used in the conduct of the business generally, were essentially the same as used in times of war or national emergency. For reasons involving both employee safety, prudent use of war-time

materiel, and other reasons, raw materials, finished goods, and salvageable waste were handled so as to minimize waste. The importance of safety procedures and thus the need to carefully and prudently handle materials--thus minimizing and controlling waste--cannot be overemphasized. A munitions facility like Bermite is unique in that, by definition, and as a part of standard operating procedures, material and waste controls were an integral part of its operations. The types of wastes generated were as variable as the number of unit operations listed. There are no records or other details available on the specific wastes generated from or by each process or product throughout the years. General information was presented in the RCRA Part A and Part B applications originally submitted by Bermite to the United States Environmental Production Agency and the California Department of Health Services in approximately 1980 and 1986 respectively.

The wastes generated by Bermite's manufacturing activities can be broken down, practically, into the following general categories:

1. Concentrated Reactive Solids. Concentrated reactive solids were generated by a number of manufacturing operations. Typical examples of this type of waste would be:

   (a) Trimmings or cuttings from pressing, extruding, or machining of propellant or flare grains.

   (b) Fall-out from operations such as grinding, granulating, screening or mixing.

   (c) Reject parts.

2. Contaminated Paper, Rags, and Disposable Tools and Containers. Each active unit operation area described above was meticulously cleaned at least daily. These cleaning operations generated a significant amount of contaminated disposables. These contaminated disposables were typically packaged in Velostat bags, overpacked in fiber drums, and staged or stored for further disposition.

3. Wash Waters and Spent Solvents. Wash waters, spent solvents, and other liquid wastes resulting from the manufacturing processes included:

   (a) Lead azide wash waters

   (b) Phosphorus-stabilizing wash waters

   (c) Spent shock-gel solvent

   (d) Slurry equipment cleaning solvent

The disposal practices that have been utilized at the site by Whittaker include the following:

1. Surface Impoundments. The former surface impoundments in the vicinity of buildings 317 and 342 were used to store and evaporate wash waters and solvents generated as described in Paragraph 3, above. Concentrates and accumulated residues from these impoundments were ultimately shipped off-site for disposal. Following the removal from service of these surface impoundments, liquid wastes were put in drums or tanks, stored onsite for less than 90 days, and shipped off-site for disposal.

2. On-Site Burning. Concentrated reactives and contaminated disposables were burned on-site at various times when authorized by the South Coast Air Quality Management District. Open burning also took place at Fort Irwin. Most recently, concentrated reactives and contaminated disposables were disposed of at a licensed hazardous waste treatment facility in Louisiana.

Further details of the various hazardous waste management practices employed by Whittaker at the Bermite facility are found in the subsequent 22 sections of this response.

RESPONSE: WASHWATER TREATMENT OPERATIONS (LEAD AZIDE)

Prior to commissioning the location referred to as RCRA management unit 3, the processing of lead azide took place at the old lead azide treatment area. See discussion of old azide area, page 16.

Following processing of the lead azide, the resulting stabilized waste was pumped and transported off-site for disposal or transferred to tanks for less than 90 days prior to off-site disposal. An explosion occurred at the old azide area on October 31, 1978. As a result of the explosion the company built this new lead azide facility. The company had planned to use a fiberglass boat hull mold as an impoundment. This hull mold was never used since the facility had been completed on a permanent basis by the time the hull mold would have been used.

Whittaker intends to complete the closure of this facility in accordance with the Revised RCRA Closure Plan approved by EPA and DHS approved September 30, 1987 (as the same may be modified in our continuing discussions with EPA and DHS) (the "Revised RCRA Closure Plan"). For more information concerning a description of the tanks, processes, and containment systems employed at RCRA management unit 3, please see Appendix A to these responses, reproduced from the RCRA Part B application. Please note that these tanks and containment systems were removed from the site and manifested as hazardous waste.

RESPONSE: EAST FORK DETONATION RANGE

The East Fork Detonation Range was used primarily to detonate old or off-spec components. This detonation range was approximately 50-feet long by 20-feet wide. Generally, materials to be detonated were packed in paper containers and placed into shallow holes at depths up to six feet. A small booster charge was loaded with the materials to be detonated and the hole was then filled to the ground surface. Generally three such holes were prepared in close proximity to each other with each of the holes containing approximately 10 pounds of net explosive weight. After preparation of the materials in the holes, and evacuation of personnel to safety, the material was detonated remotely.

For other details concerning procedures employed at the East Fork Detonation Range, please see the RCRA Revised Closure Plan.

RESPONSE: PORTABLE STEEL MAGAZINES 502, 504 AND 506

We estimate that the magazines were in operation for the following approximate periods:

502	From 1980 to 1986
504	From 1980 to 1986
506	From 1980 to 1986
3 Portable Wood Magazines	From 1980 to 1986

Appendix B to these responses gives additional information as to the construction and storage practices employed in both the steel magazines and wood magazines.

RESPONSE: PYROTECHNIC STORAGE MAGAZINE (Building 236)

Building 236 was a concrete block structure approximately 40 feet long by 20-feet wide and 12-feet high. This building was in use from approximately 1980 to 1986 and was used to store dry waste propellants. These materials were generally contained in bags which were then packed into ammo cans or fiber drums. The wastes stored in this building were off-spec flare mix, BP-1 powder, and rocket propellant. The major component of each of these wastes is magnesium. Because of the explosive nature of the materials, great care was taken to ensure that there was no spillage or leakage of any of the materials stored in this building.

The materials were stored for highly variable periods, some for only a few days while others might have been stored for months. Until January 9, 1986 most of this material was burned on-site in the burn pit area. Following January 9, 1986 this material was shipped to and treated at a licensed offsite hazardous waste treatment facility (R & D, Inc. in Colfax, Louisiana).

RESPONSE: PYROTECHNIC STORAGE MAGAZINE (Building 223)

Building 223 is a wood-frame, corrugated-metal sided building, with concrete floor and large overhead doors in addition to normal personnel entrance doors. The building is 21 feet long, 40.5 feet wide, and approximately 14 feet high. This Storage Magazine was in use from approximately 1980 - 1986 and was used to store fiber drums containing Velostat bags of dry paper contaminated with explosive material, and other disposables such as gloves and wipes used in, or resulting from the production of explosive items. The paper and other disposables were contaminated with flare-mix, rocket propellant or BP-1 powder.

Wastes were generally doubly packaged in bags and fiber drums. Because of the explosive nature of the waste, significant care was taken to ensure that there was no spillage or leaking of hazardous waste in or around this storage magazine.

Waste was stored in this building until it was burned at the burn cage area or after January 9, 1986, shipped to a licensed hazardous waste facility. The hazardous waste in the building at the time of the commencement of closure of this management unit was shipped to R&D, Inc. in Colfax, Louisiana for treatment and disposal.

RESPONSE: DRUM STAGING UNIT (Proximity of Building 317)

This was a lightly constructed wood-frame building, consisting of four posts and a wood or corrugated roof, open on all sides. The structure was approximately 12-feet long by 12-feet wide and about 8-feet tall. This structure was in use from approximately the mid-1960's until removal in February 1987. So far as anyone with whom we have spoken can recall, this unit was used primarily as a staging area or collection station where 55-gallon drums were staged until waste specialists processed them. This area was not a RCRA hazardous waste management unit since any storage was for less than 90 days.

RESPONSE: TEMPORARY DRUM HOLDING AREA (Proximity of Building 342)

This was a concrete pad constructed during summer of 1983. The containment area has the following dimensions: I.D. 130 feet by 80 feet, with a 6-inch thick 24-inch high containment wall. Construction materials were concrete, five sack mix for minimum compression strength of 2,500 PSI. The structure was reinforced with reinforcing steel conforming to ASTM A615 Grade 40 deformed reinforced steel with welded smooth wire fabric conforming to ASTM A185 with an FY of 40,000 PSI. The concrete pad sloped to draining pipes in the containment wall. Removing pipe plugs allowed precipitation to drain off. All containers held in this area were placed on pallets to prevent contact between containers and standing liquids.

The solvents held in this area were primarily hexane, cyclo hexane, MEK and acetone. We know of no other waste handled in this area.

Materials were held in this site for less than 90 days until appropriate off-site disposal was arranged, and thus it was not a RCRA hazardous waste management unit which required formal closure. Manifests for these wastes are available.

This slab was removed in January 1987.

RESPONSE: OPEN BURNING AREA

The open burning area consisted of several waste management units. These units consisted of a burn cage, a holding bunker and various pans and rails used to incinerate waste. In addition, two former burn areas which were not used after late 1983, were used primarily to burn contaminated paper and gloves. For additional details, the following summary of each of these areas provides a general description. The references in the descriptions are to the Revised RCRA Closure Plan which provides additional information and details.

BURN CAGE, PANS AND RAILS

1. Cage. The burn cage was an expanded metal cage which was used to burn contaminated paper and gloves collected from the manufacturing operations at the end of each work shift. The cage was 10 feet long by 10 feet wide by 7 feet high. Wastes were placed in the metal burn cage for burning, when authorized by the South Coast Air Quality Management District.

2. Pans. Three steel pans were used for burning wastes containing fine pieces of material or powders. The wastes were carefully spread in a thin layer over the pans and were then ignited. The pans were 31-inches long by 26 inches wide by 2-inches deep. The wastes burned were off-spec flare mix, rocket propellant, and BP-1 powder. As indicated above, the main component of these wastes was magnesium. Because of the explosive nature of the materials, care was taken to ensure that no spillage took place. Burning was conducted only when authorized by the South Coast Air Quality Management District.

3. Rails. Four steel rails were used to burn off-spec flare pellets and loose powders. As indicated above, the main component of these wastes was magnesium. These rails were 20.5-feet long by 3-inches deep. The waste materials were placed on the steel channels for treatment by burning.

   Because of the explosive nature of these wastes, they were handled with extreme care and we do not believe spillage or leakage of these explosive materials took place.

Two Former Burn Areas

Two former burn areas, not used since late 1983, were used historically to burn contaminated paper and gloves. These areas are approximately 50-feet long by 25-feet wide and 40-feet long by 30-feet wide. The approximate location and size of these areas were determined by interviewing operation personnel who had used these facilities. The burn areas were protected by berms on three sides for protection of the operating personnel. Wastes were loaded into the burn areas and then ignited remotely.

These areas became covered with two to three feet of soil in late 1983 and have not been used since that date.

RESPONSE: FORMER SURFACE IMPOUNDMENT NEAR 317 AREA

The 317 area was a lined surface impoundment, so designated because it was located next to building 317. The pond was hypalon-lined and was used to collect and store waste organic solvents contaminated with reactive materials prior to manifesting for off-site treatment and/or disposal. The unit was approximately 50-feet by 50-feet in size.

The waste were removed from this unit and were shipped to an off-site Class I facility via a registered waste hauler during late 1983. Further information and details are presented in the Revised RCRA Closure Plan and in previous correspondence with EPA and DHS regarding Impoundments 317 and 342.

RESPONSE: FORMER SURFACE IMPOUNDMENT NEAR 342

The 342 area was a lined surface impoundment so designated because it was located near building 342. The pond was a hypalon-lined basin and was used to collect and store stabilized phosphorus prior to manifesting for off-site treatment and disposal. The impoundment was a two basin system with each basin being approximately 50-feet by 50-feet in dimension.

The wastes were removed from this unit and were shipped to an off-site Class 1 facility via registered waste hauler during late 1983. The unit was closed at that time under the supervision of EPA, DHS, and the Regional Water Quality Control Board--Los Angeles Region and no longer exists.

The stabilization of red phosphorus took place on the pad immediately above the site of the former surface impoundment. The characteristics of red phosphorus are included in the Revised RCRA Closure Plan.

A leak detection system was constructed prior to the construction of the surface impoundment and included a trench which contained permeable gravel and a collection pipe which terminated in an inspection box.

Upon removal of the waste and the liner, soil samples were collected from beneath the surface impoundment in 1983. The results did not detect any contaminants. These results were submitted to the DHS and the EPA at that time. Conversations with DHS and EPA following submission of these results indicated to us that this unit was considered closed.

Further information and detail are presented in the Revised RCRA Closure Plan, and in previous correspondence with EPA and DHS regarding Impoundments 317 and 342.

RESPONSE: TANK FARM

The construction details for the tank farm, located near the 317 area, is enclosed in Appendix C.

There were three tanks located at the tank farm with the dimensions and construction materials shown in Appendix C. This information was originally filed with the RCRA Part B Application by Bermite in 1985, and subsequently was withdrawn. The tank farm was operated from March 8, 1984 to December 19, 1985. During the approximate time frame of September to October 1986 the tanks were sold, disassembled and removed from the site by the buyer. The liners in the tank were removed and shipped for offsite disposal as hazardous waste. The tanks themselves were steam-cleaned and the water was shipped as hazardous waste. The concrete containment area and pad were removed in January of 1987. The tank farm was not a RCRA hazardous waste management unit. Wastes were not held at this site for more than 90 days before being transported offsite for recycling or disposal.

RESPONSE: BUILDING 41

Building 41 was originally a six-horse wooden stable. The dimensions were approximately 25-feet by 65-feet and, at one point in time, heat pellets for thermal batteries were oven cured at this facility. The facility has not been in use since approximately 1970. For the last 15 years the maintenance department had used this facility to store air conditioning parts and equipment.

The facility was of wood construction and there was an apparent septic system located at this facility that had been closed in the early 1970's.

The structure was removed on June 11, 1986. As an added precaution, because it was not known what residues, if any, were in the apparent septic system, an area was trenched on June 26, 1987. A trench 20 feet long by approximately 12 feet deep was constructed in the area of the suspected septic system area. There was no visual signs of the alleged septic tank nor any visible contamination. A Century Organic Vapor Analyzer (OVA) was used to measure organic vapors in the soil and the trench. No detectable levels of materials were present. It was thus determined that no hazardous materials were present in the soil.

RESPONSE: OLD AZIDE AREA HOLDING TANK AND BASIN

On October 31, 1978, Mr. Bruce Neubauer was fatally injured by a lead azide explosion at the old lead azide area. Though this facility was in operation for at least 20 years prior to the explosion, following the injury, the area was closed and a new azide area was constructed.

The old facility consisted of a wood frame building with a wood roof, corrugated steel sides and was approximately 12-feet by 16-feet. The building probably had a plywood floor.

The start date of operation of this unit is unknown, but the unit was operated until October 31, 1978.

The wastes that were generated at this unit were the same as the lead azide waste described in the Revised RCRA Closure Plan for the lead azide unit building 207. The wastewaters were discharged to concrete sumps after the neutralization process took place.

For safety purposes, during 1978, the sumps were carefully cleaned out and backfilled. Soil samples taken in the sump area and drainage area below this area were taken during April 1986 and showed lead EP toxicity tests of less than 0.05 mg/l.

RESPONSE: PURPORTED BUILDING 6 SEPTIC TANK

To the knowledge of the current staff, some of whom have been on-site for more than 27 years, there has not been a septic tank at building 6. The building was demolished and the demolition contractor indicated that there was no septic tank at building 6. A sanitary sink floor for hand washing was connected to a septic holding transfer station in front of building 9. The sanitary waste then was pumped to a leach field behind building 45. This leach field is still in existence. There were no wastes stored in this unit. Building 6 was removed and dismantled between December 2 and December 4, 1986.

RESPONSE: MAGAZINE 14

This building was a concrete-block building with a wood roof and cement floors with dimensions of approximately 25-feet by 25-feet. The entire complex was covered with a wood roof for weather protection. The current staff cannot recall any significant activity at this site since 1960. We have no knowledge that wastes were generated or managed at this location.

Any activity that would have taken place at this site would have included high explosives. Soil samples taken in April 1986 in an old concrete sump near the building at 1/2 to 3-1/4 inch deep were found to be non-reactive by Bermite laboratory personnel. The building and associated sump were removed on July 10, 1986.

RESPONSE: OLD DYNAMITE BUILDING

This facility was last used prior to World War II and, according to reports of people who have worked at the facility for a number of years, thought to have last been used during the 1930's. The construction date of the facility is not known. The building was a two-storey frame building approximately 25-feet by 40-feet. The building was wood-frame construction, with corrugated steel sides and all wood floors.

It is not thought that wastes were generated or managed at this site, since dynamite formulating is a mixing operation and does not generate waste.

There probably were no wastes generated and any off-spec product would have been detonated.

The building was removed and dismantled on August 26, 1986.

RESPONSE: BUILDING 59 SUMP

Building 59 was a brick building approximately 30-feet by 30-feet with a concrete floor and a wood roof. It was used primarily as an engineering office. It contained an emergency shower and a hand sink. If used, the emergency shower and hand sink were discharged to a small hole in the ground. The hole may have been brick or wood lined and had an open bottom. The building was in operation from at least 1960 until it was removed on December 18, 1986. It is not known, from people who have worked at the plant, that there were any wastes generated or managed at this location.

RESPONSE: TANK IN BUILDING 347

Building 347 was constructed in the early 1970's. It was a concrete-block building with a wood roof. It was approximately 40-feet by 60-feet. It was a production building for approximately one month during the early 1970's. To the best recollection of people who have worked at the plant, it may have contained a stainless steel holding tank during this short production period. If so, it would likely have been used to hold processed hexane only. The date of removal of the tank is not known. Recollections are that the tank was empty and unused for at least ten years prior to its removal in January of 1987.

To the best of the knowledge of the plant personnel, no wastes were generated, stored or treated at this location.

RESPONSE: TRANSFER BASIN - MELT AND POUR

The melt and pour operation took place in building 110. Building 110 was approximately 18-feet by 42-feet. It was constructed of a wood frame with corrugated steel siding. High explosives were melted and cast at this facility. All waste were removed daily and were detonated in the detonation area.

This operation was discontinued in the early 1960's. During the 1970's the building was used to package glass ampules of titanium tetrachloride. A small subsurface concrete basin was installed to catch broken glass from wash water and some of the reject ampules. The wash water was then transferred to the 342 impoundment. The titanium tetrachlorine was the only chemical in this facility. The entire facility was removed on August 5, 1987.

RESPONSE: DRUM RINSING AREA

People who had worked at the plant cannot remember an area where drum rinsing took place. It was planned to install a drum rinsing station in the vicinity of the 342 complex to be used in conjunction with the containment pads, but this station was never installed.

Sidewinder, Chapparal and Chapparal parts were steam-cleaned under a roofed structure near the 317 site. The liquids flowed through a concrete channel to the surface impoundment near the 317 area. Please refer to the information on the former 317 surface impoundment.

RESPONSE: BUILDING 37

Long-term employees recall that building 37 was a production area at least since 1960. It was still a production building until its removal on February 19, 1987. Drums stored at this area were for raw materials waiting to be processed. There was no known waste storage at this area. There is, therefore, no known rationale for calling this building a satellite hazardous waste drum station.

APPENDIX A

WASHWATER TREATMENT OPERATIONS (LEAD AZIDE) DETAILS

Washwater Treatment Operations Details (Lead Azide)

1. This facility was inhouse custom designed and constructed for its intended purpose of explosives neutralization. The four stainless steel (A-D) tanks were selected and purchased for their inherent ability to withstand corrosive liquids and the steel containment tank was selected for its strength and durability to contain any leakage or spilled material. No specific design standard was utilized for this installation. The facility was installed in 1977. Engineer certification not on file.

2. Tank Description:

   Tank A.

   a. (1) Dimensions: 48" x 72" x 36".

      (2) Capacity: 72 ft.^{3}, 538.56 gallons.

      (3) Shell Thickness: 0.1250 inches.

      (4) Pressure Rating: atmospheric (open top tank).

      (5) Structural Supports Consist of: 3" x 1/4" angle iron welded to bottom to prevent contact with outer containment, 1-1/2" x 1/4" angle iron along top edge of tank.

   b. Construction material 300 series stainless steel A.I.S.I. type 316.

   c. Tanks are not lined.

   d. Resistance to corrosion was determined in accordance with the data table "Corrosion Resistance of Stainless Steels" to various chemical media page 906 of DUCOMMUN Metal and Supply Co., booklet titled "Metallurgical and Engineering Data", for the constituents of this material is rated as excellent.

   e. Design specifications for the foundation, or subfoundation: 4 inch, 5 sack concrete mix, minimum compression rating 2500 psi.

   f. Date facility went into service 1977.

Tank B.

a. (1) Dimensions: 48" x 71-1/2" x 32".

(2) Capacity: 63.65 ft.^{3}, 476.12 gallons.

(3) Shell Thickness: 0.1250 inches.

(4) Pressure Rating: atomospheric (open top tank).

(5) Structural Supports Consist of:

3" x 1/4" angle iron welded to bottom to prevent contact with outer containment, 1-1/2" x 1/4" angle iron along top to edge of tank.

b. Construction material 300 series stainless steel A.I.S.I. type 316.

c. Tanks are not lined.

d. Resistance to corrosion was determined in accordance with the data table "Corrosion Resistance of Stainless Steels" to various chemical media page 906 of DUCOMMUN Metal and Supply Co., booklet titled "Metallurgical and Engineering Data", for the constituents of this material is rated as excellent.

e. Design specifications for the foundation, or subfoundation: 4 inch, 5 sack concrete mix, minimum compression rating 2500 psi.

f. Date facility went into service 1977.

Tank C.

a. (1) Dimensions: 48" x 72" x 36".

(2) Capacity: 72 ft.^{3}, 538.56 gallons.

(3) Shell Thickness: 0.1250 inches.

(4) Pressure Rating: atmospheric (open top tank).

(5) Structural Supports Consist of: 3" x 1/4" angle iron welded to bottom of tank to prevent contact of tank with

concrete pad, 1-1/2" x 1/4" angle iron along top edge of tank.

b. Construction material 300 series stainless steel A.I.S.I. type 316.

c. Tanks are not lined.

d. Resistance to corrosion was determined in accordance with the data table "Corrosion Resistance of Stainless Steels" to various chemical media page 906 of DUCOMMUN Metal and Supply Co., booklet titled "Metallurgical and Engineering Data", for the constituents of this material is rated as excellent.

e. Design specifications for the foundation, or subfoundation: 4 inch, 5 sack concrete mix, minimum compression rating 2500 psi.

f. Date facility went into service 1977.

Tank D.

a. (1) Dimensions: 48" x 72 x 36".

(2) Capacity: 72 $ft.^3$, 538.56 gallons.

(3) Shell Thickness: 0.1250 inches.

(4) Pressure Rating: atmospheric (open top tank).

(5) Structural Supports Consist of: 3" x 1/4" angle iron welded to bottom of tank to prevent contact of tank with concrete pad, 1-1/2" x 1/4" angle iron along top edge of tank.

b. Construction material 300 series stainless steel A.I.S.I. type 316.

c. Tanks are not lined.

d. Resistance to corrosion was determined in accordance with the data table "Corrosion Resistance of Stainless Steels" to various chemical media page 906 of DUCOMMUN Metal and Supply Co., booklet titled "Metallurgical and Engineering Data", for the constituents of this material is rated as excellent.

e. Design specifications for the foundation, or subfoundation: 4 inch, 5 sack concrete mix for minimum compression rating 2500 psi.

f. Date facility went into service 1977.

3. Diagram for each Tank.

See Attachment XI - Drawing and Diagram Section

4. Tank A is fed by a gravity flow trough system from the process building. There is no cutoff feed system and no bypass system. Operator controlled.

Tank B is gravity fed by a rubber hose with a clamping (hose pinch) device to stop flow from Tank A. There is no bypass system or pressure control. Operator controlled.

Tank C and Tank D are fed by a pipe (PVC) from Tank B. The cutoff system are manually operated by valves. There is no bypass system and no pressure controls. Operator controlled.

5. Waste Description.

Tank A.

a. Collects wash water from processing of lead-based initiating explosives compound.

b. Specific qravity: range 1.1 to 1.50.

c. No adverse effects have been noted between the tank materials or the waste.

d. No vapor control on tank - open top.

e. Tank is labeled with major constituents

Tank B.

a. Neutralized wash water from Tank A are collected in this tank.

b. Specific gravity: range 1.10 to 1.50.

c. No adverse effects have been noted between the tank material and the waste collected.

d. No vapor control system on tank, open top.

e. Tank is labeled with major constituents.

Tank C.

a. Neutralized, stabilized wash water from Tank B collected and held prior to removing to management Unit #9.

b. Specific gravity: range 1.10 to 1.50

c. No adverse effects have been noted between the tank material and waste water.

d. No vapor control on tank-open top.

e. Tank is labeled with major constituents.

Tank D.

a. Neutralized, stabilized wash water, overflow from Tank C.

b. Specific gravity: range 1.10 to 1.50.

c. No adverse effects have been noted between tank materials and waste.

d. No vapor control system on tank, open top.

e. No label on tank, only wash water from Tank C is collected, no other feed system.

7. Containment System:

Tank A.

a. Tank A is surrounded by a steel tank. Construction material: 3/16" steel plate welded seams with 1/4" x 2-1/2" angle iron for support. The inside dimensions are 64.13" X 88.13" X 36.31" .

b. A 3" x 1/4" angle iron is welded to the bottom plate of Tank A to prevent contact with potential accumulation of liquid in the containment. The outer steel containment tank is supported along the back edge with a 4" X 6" X 8' wood beam and along the front edge with a 4" X 4" X 8' wood beam which provides an approximate 2" slope from back to front allowing liquid flowage discharge through the drain pipe and prevents contact with the concrete pad containment.

c. The capacity of the outer steel containment tank is 900 gallons. The inner stainless steel treatment tank is 545 gallons.

d. Run-on is prevented by a block wall surrounding the concrete pad holding the tank, preventing flowage into the unit. The treatment and steel containment tanks are provided with covers to prevent precepitation accumulation.

e. Samples of accumulated liquids in the containment are obtained and analyzed by inhouse laboratory for material similar to what is found in the treatment tank. To prevent overflow a hose can be connected to the drain pipe and valve and allowed to drain into Tank B if treatment is needed, or into the containment area if the liquid is determined to be precipitation only.

Tank B is of similar design and construction materials as Tank A's containment system. The dimensions, capacity, runon control and method of analysis is the same.

Tank C and Tank D.

a. Tank C and Tank D are within a concrete containment structure. The walls are concrete approximately 6" thick. The dimensions of this structure is 9.54 ft. X 18.4 ft. X 2.67 ft.

The containment has a continuous concrete floor which is impervious to waste water.

b. Tank C and Tank D is provided with 1/4" X 3" angle iron welded to the bottom of the tanks to prevent contact with the concrete base.

c. The capacity of the containment is approximately 3,500 gallons which allows adequate capacity to obtain samples, analyze and plan action to remove accumulated liquids to prevent overflow.

d. Run-on is prevented by the containment wall. The base of which is 2.5 feet higher than the surrounding ground surface.

e. The same sampling method is employed for Tank A and Tank B containment system.

8. All tanks at this management unit are entirely situated above ground. All tanks are open top and can be entered for inspection.

9. Engineer certification, not on file.

APPENDIX B

STORAGE BUILDING DETAILS

APPENDIX B

Portable Steel Magazines 502, 504 and 506

These portable steel magazines, which are lined with plywood, were used to store accumulated dry explosive waste prior to burning in the burn cage. These magazines are 16 feet long by 8 feet wide by 7 feet high. These portable steel magazines are identical to those which were used to store explosive manufacturing materials and products throughout the plant site. These three magazines were specifically designated for hazardous waste storage.

The hazardous wastes which were stored in these magazines were off-spec flare mix, rocket mix, rocket propellant or BP-1 powder. The major component of these wastes is magnesium. The materials stored here were in double containers and, because of the explosive nature of the wastes, and the need to exercise extreme care in their handling and storage, we do not believe that spillage or leakage occurred.

Portable Magazines

Three portable wood magazines were used to store dry off-spec flare mix, BP-1 powder and rocket propellant along an area called Lower Magazine Road. These buildings are 8 feet long by 14 feet wide by 10 feet high, 10 feet long by 10 feet wide by 9 feet high and 8 feet long by 12 feet wide by 8 feet high. These wastes were stored in bags which were placed inside ammo cans. As in the case of the other storage units, because of the explosive nature of the wastes and the need to exercise extreme care in their handling and storage, we do not believe that there was spillage or leakage of wastes at any time at any of the storage facilities. The wastes were stored in these magazines prior to burning in the burning cage or shipment to a licensed hazardous waste facility.

APPENDIX C

CONSTRUCTION DETAILS OF TANK FARM

Tanks and Concrete Containment Area Near the 317 Area

1. These three tanks were designed and constructed in accordance with "American Petroleum Institute" Standard 12B.

2. Description of Each Tank:

   a. Design Specifications:

      (1) Dimension:
      Tank #1 16 ft. diameter 8 ft. high.
      Tank #2 27 ft. diameter 8 ft. high.
      Tank #3 27 ft. diameter 8 ft. high.

      (2) Capacity:
      Tank #1 11,000 gallons (261.9 barrels)
      Tank #2 32,000 gallons (761.9 barrels)
      Tank #3 32,000 gallons (761.9 barrels)

      (3) Shell Thickness:

      Tank #1 = 0.105"
      Tank #2 & 3 = 0.135"

      (4) Pressure Rating: atmospheric

      (5) Structural Supports: I-Beam Steel/Deck.

   b. Contruction Material: Plates conform to ASTM Standard A283, grade C. Sheets have minimum tensile strength of 52,000 psi, flanges Series 300, Type 316 stainless steel, bolts hot dipped galvanized conforming to ASTM Standard A307, grade A, deck supports have basic design stress of 18,000 psi maximum with a live load of not less than 20 psf.

   c. Not Applicable.

   d. Corrosion or erosion resistance: Tanks protected from corrosion or erosion by the installation of magnesium anode sacrificial cathodic protection.

e. Date tanks went into service:

Tank #1 03/08/84
Tank #2 08/01/84
Tank #3 03/16/84

4. a. Feed System: Liquid waste is pumped via a pneumatic diaphram pump or vacuum tanker vehicle, through a filter to the designated tank, direct.

b. Waste feed cutoff system is controlled by manually operated stainless steel ball valves and gate valves.

c. No bypass system, each tank is independent of each other.

d. Pressure control is by a vent located on the top deck of the tank. Rated at 2.0 ounce pressure setting and 4 ounce vacuum setting.

e. The tank is grounded to the pump, filter and discharge container and/or vacuum tanker vehicle during waste transfer.

5. a. Types of Waste:

Tank #1 Waste Water
Tank #2 Acetone/Water Mixture 40/60%
Tank #3 Methyl Ethyl Ketone/
Water Mixture 10/90%

b. Specific Gravity:

Tank #1 1.0 @ 23°C
Tank #2 0.957 @ 23°C
Tank #3 0.987 @ 23°C

c. Solvent and water mixtures plus waste water is compatible with steel tanks provided with magnesium anode sacrificial cathodic protection.

d. No vapor control system is installed on the waste water or solvent/water mixture tanks.

e. Each tank will be labeled with the major constituents of the waste.

6. Not Applicable.

7. Containment System:

a. Storage tank containment is a continuous impervious base to the liquid waste stored in each tank.

All the reinforcing steel conforms to ASTM A615 Grade 40. Welded smooth wire fabric conforms to ASTM A185 with fy = 40,000 psi. All drain piping is controlled by gate valves which are chained and locked when not in use.

b. Construction precludes contact of liquid, however, all liquids are compatible. Any spill or leakage would be detected on a daily inspection basis, or during transfer of waste to/from tanks.

c. Capacity of the containment system is rated at 80,000 gallons.

d. Run-on is directed away from the containment area by downslope surface grading.

e. Accumulated liquids, spills or leaks can be detected by visual inspection of the tanks/containment. Analysis for constituents can be performed by on-site chemical laboratory. No overflow would be anticipated due to capacity of containment as compared to the total capacity of the storage tanks.

8. All tanks are entirely situated above ground. Two manholes on each tank allows entry into the specific tank for inspection.